# The Electragist

TRADE MARK REG. U.S. PAT. OFFICE

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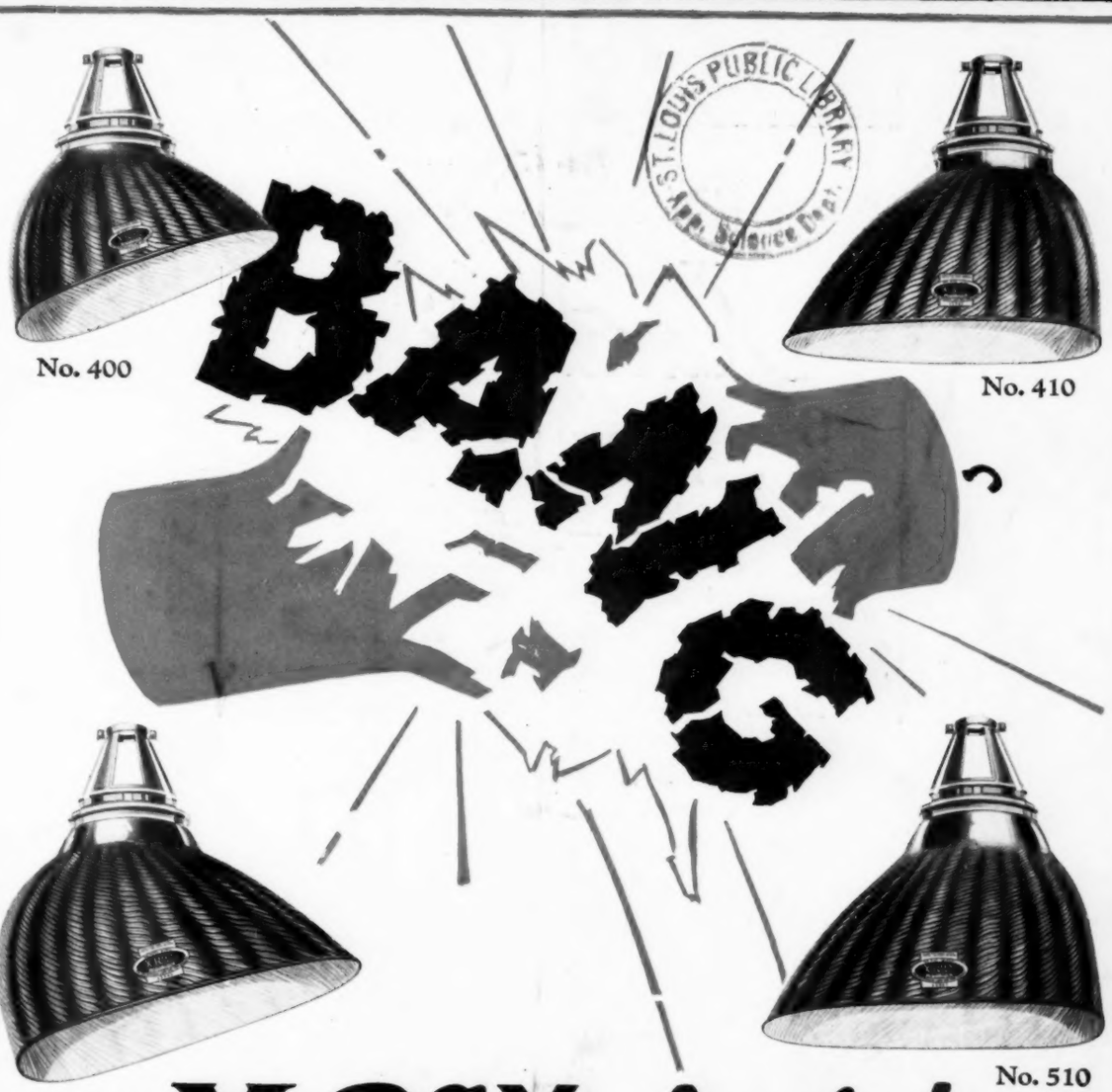


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# The Electragist

*(The National Electrical Contractor and The Electrical Contractor-Dealer)*
*Official Journal of the*
*Association of Electragists—International*

Vol. 24 JULY, 1925 No. 9


# Jobbers Must Choose Between Contractor-Dealers and Industrials*


BY JOSEPH A. FOWLER
**President, Association of Electragists, International**


THEORETICALLY every student of business economy must endorse the principle that the jobber and the retailer are logical links in the chain of distribution and an acceptance of the theory requires no argument to this audience, but it is appropriate to try to determine why the theory does not work out in practice.

Taking the contractor-dealer as our starting point, we find this class to be made up of many elements such as exclusive dealers, exclusive contractors, combined dealers and contractors, hardware, drug and department stores with electrical departments and lighting company stores. At present the exclusive contractor-dealer is the most important element for the consideration of the jobber, because with but few exceptions they are largely dependent upon the electrical jobber. To them the jobber must be warehouseman, school master, trade leader and banker.

* * * *

WE are rapidly approaching a market situation wherein the electrical supply jobber must depend upon the contractor-dealer or the industrial for the bulk of his business. Chain and department stores are served through buying syndicates. Drug and hardware stores through their own jobbers and central stations are tending to deal directly with the manufacturer.

Our Executive Committee met last St. Patrick's Day not with the least idea of driving the jobbers, the manufacturers or anybody else into an embarassing position but to begin a drive to bring about a better understanding of the obligations, responsibilities and opportunities of three of the star performers in the plan of distribution which is generally accepted as logical and practical in most of the staple industries.

* * * *

NATURALLY in this discussion on Trade Policy only generalities can be considered. All of us are ready and willing to make concessions to the practical necessities which effect the principles involved in this question of orderly distribution. We know that if all the industrial demand for electrical merchandise suddenly became our responsibility we wouldn't know what to do with it any more than the jobbers would know what to do with all the contractor-dealer business if it were offered to them. It is conceivable that dealers would seek to serve all classes of consumers if they could do so at a profit. It is obvious that jobbers would place themselves in a position to adequately serve all the needs of the contractors and dealers if their peculiar fitness was recognized by both manufacturer and dealer.

Possibly our purpose has not been understood clearly enough. We have no intention or desire to ask this association or its members to enter into an agreement with us to regulate the movement of electrical merchandise from manufacturer to jobber through contractor and dealer to consumer. We know that there are trade resistances which now and probably always will make impossible a general acceptance of this principle as feasible and workable. Certain types of consumers have needs which not only entitle them to wholesale consideration but which demand technical attention within the purview of the producer alone. Contractors and dealers have occasional need for services which a jobber could not profitably fit himself to render.

* * * *

IT is conceded that methods of distribution depend in varying degrees upon the character of the commodity. The method employed in selling a complicated unit of machinery involves a process differing from an order for a package of sockets. Readiness to sell sockets is simply a question of warehousing and delivery while frequently machinery is built to order and need not require any of the facilities of jobber or dealer although if given encouragement, by reason of their contact with the trade, both jobber and dealer can be of constructive value in sales promotion.

* * * *

DURING the last few years we have witnessed the most tremendous commercial metamorphosis in the history of any industry—the growth of what Mr. Tripp styles *Superpower*. Two factors made Superpower possible and

* The foregoing paragraphs are taken from addresses made by Mr. Fowler before the Westinghouse Agent Jobbers' Association and the Electrical Supply Jobbers' Association at Hot Springs, Virginia, on May 29 and June 4, respectively.

both came out of the travail of the war —Power shortage gave birth to the inspiration but financial distress brought about by rising production costs, with stationery or decreased revenues, made not only possible but necessary the grouping of many power producing units under Superpower control.

* * * *

MONTH by month electrical supply jobbers witness the passing of old cherished friends and customers into the maw of Superpower with scarcely a trace of business left behind. What is left for the jobber?

Just two sources of business—either the Contractor-dealer or the Industrial. If the jobber chooses the industrial he simply becomes a species of retailer with the problems of a dealer and no merchant who has ever been a jobber wants to become a retailer again. If he chooses the contractor-dealer and does so with proper vision of the contractor-dealer's future, together they have an opportunity for a re-naissance in the business of electrical merchandising.

* * * *

A MUTUAL understanding of the factors which now offer trade resistance must be the first step in a program toward co-operation in distribution through jobber and dealer. Jobbers must become more vitally concerned about the stability of their contractor-dealer constituency.

* * * *

"WE do not sell our customer's customer" is a slogan which is receiving sympathetic consideration by many jobbers and manufacturers. Analyzed it means that customers have certain sacred rights, chief of which is freedom of competition from their suppliers, where their customers are concerned.

# Selection of Dealers Should be as Individuals and Not as an Industry *

By EDWARD N. HURLEY
Hurley Machine Company, Chicago, Ill.

THERE are three general classifications of merchandise products: Convenience articles, shopping articles and specialties, each of which requires for its proper distribution separate treatment.

In the sale of a "convenience" article, the purchaser is influenced only by the convenience of the location of the store. "Shopping" articles require central location and attractive display. The customer's mind is not made up as to what will be purchased until she has shopped around. The "specialty" article must be handled as a specialty, requiring special sales service, special demonstrations, and may or may not require service after installation. Into this class most of the electrical devices naturally belong.

My opinion is that in the electrical industry a proper classification and segregation of the type of article to be sold has been often overlooked, for example: Wiring supplies, conduit, switches and the other essentials for equipping a house for the proper use of an electrical specialty cannot be considered in the same light that package electrical merchandise is, and the reason therefor is plain. The class of customers to whom electrical distributors sell is a varied one—some are contractors who purchase building material; some may also be dealers and purchase a small amount of package merchandise, or merchandise specialties; but the sales effort expended and the outlet selected should not necessarily be the same for best results. This is true in radio.

Naturally, a wired home came before the use of the vacuum cleaner, or the washing machine, or the ironing machine, and the distributors handling the wire, sockets, conduit and other essentials for making the home suitable for the use of an electrical device, were chosen as the outlet for the electrical specialty, but it does not follow that all of their dealer outlets will be suitable for specialty sales. It is my belief that a careful selection of the retail outlets for the sale of a specialty will give a broader market as well as a larger volume of sales than if the manufacturer endeavors to select types of dealers and educate them.

In radio, it has been found by experience that the classification of the dealer is not as important as the type of the individual dealer. If the dealer is primarily a merchant, and will then treat the article on the basis of his normal requirements for proper sale, if he will not parallel his lines, he can do a better job. If a dealer parallels his line of specialties, he endeavors to place himself in the position of a "shopping" store, but his store location and advertising appeal are not presented on a basis of "shopping" but rather on a basis of "specialty" selling. Consequently, he is not going to do the best job for himself, or the manufacturer.

With regard to the dealer outlet, whether the sale is made through the wholesaler, or direct by the manufacturer, the desirable number of outlets will depend upon whether or not the article is a "convenience" article or a "specialty" and, next the inventory investment required on the part of the dealer to handle the product successfully and satisfactorily. For example, in radio today, it is thought there are too many dealers for receivers, rather than not enough, and, no doubt, what will take place is a selection of the best merchants among those dealers to handle radio receivers, rather than taking considerable time, and perhaps needlessly, in an effort and endeavor to educate some particular type of dealer outlet to handle radio. Educating retail outlets is a slow process at best, and in a situation where the public's acceptance of an article is established and the consumer demand has been in excess of the supply, it is difficult to apply the same rules in selling as when the market must be created.

* Abstracted from an address on "Merchandising Electrical Appliances," delivered on June 16 before the convention of the N. E. L. A. at San Francisco.

## Price Policy Scored

"It is rather difficult to understand why many electrical service companies still have no 'Price policy' and continue to sell at their cost prices, or make such other sacrifices to effect a sale, that there is no profit in.

"A condition like this not only makes it difficult for the purchaser to arrive at a decision as to what is the right price to pay, but discourages the retailer from putting forth the proper and necessary efforts to build up an appliance business from which we all benefit."—*From the report of the Appliance Bureau of the Canadian Electrical Association, Montreal, June* 10, 11, 12, 1925.

# East Meets West in New York and Both Profit

## A Chinese Contractor Has Found That Quality Work Speaks for Itself and Can be Appreciated by all Races

By ALFRED BATSON
Associate Editor, The Electragist

A CLOSE approach to arcadia—the contractor's arcadia, that he has long dreamed of and never expected to find, where he has practically a monopoly on the business, where it comes to him unsolicited, and most important of all, where there are few entries on the bad debt page—has been found.

It is in a section of New York City, enclosed in only three city blocks, and while the number of its inhabitants is by no means certain there are at least two thousand people within its limits whose chief business is catering to American whimsicalities and love for the bizarre.

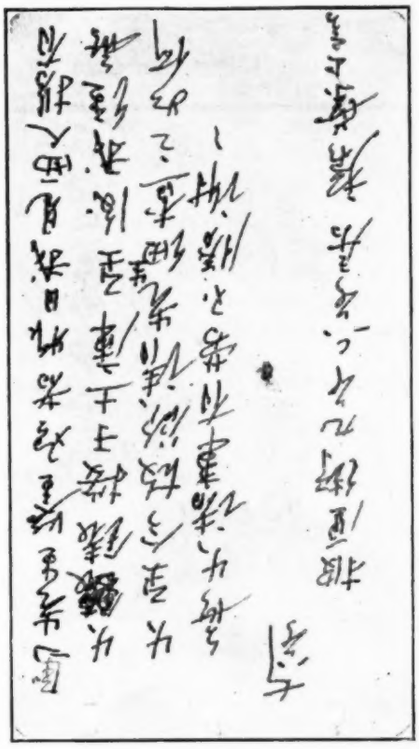
Briefly it is in Chinatown and the man who has achieved the contractor's dream is George L. Marr, himself of Chinese parentage and with a record of 12 years apprenticeship in the business behind him.

When any electrical work is required in Chinatown the answer is—George L. Marr—as I discovered after going in several restaurants and asking who installed the wiring and fixtures.

Mr. Marr's business location is on Doyers Street and I found his shop to be in a large basement that included a spacious work bench in the center with an imposing rack of supplies against the wall.

The floor was covered with work in process but he found time to talk with me and give me some high lights on his business. At the present time it is confined mostly to ventilating fan installations, repairs and the wiring of new chop suey houses. He speaks excellent English and has a keen sense of humor.

"Perhaps the most interesting work I have done recently," he said, "was the wiring of the two Chinese theatres that have just been opened to house two groups of players direct from Hong Kong. While the work was not difficult it presented some problems as the lighting for Chinese theatres is not at all like that for Western theatres."



**What would you do if you found this in your mail box? It is to the effect that "a man came around and took out the black box on the cellar wall and the lights won't go." Would you go around and fix it? Mr. Marr did, and now everybody is happy.**

Through the various Chinese fraternal organizations, and there are many of them for one seldom hears of a Chinaman being in want, Mr. Marr has come in contact with many of the owners of the chains of chop suey restaurants that have headquarters in Chinatown and he has made a feature of work of this kind.

Speaking of this type of work, he said, "The chop suey restaurant has come to stay and if the electrical contractors would realize this and go after the business they would find it clean and very acceptable. Large sums are being spent in equipping these establishments and this involves considerable money for electrical furnishings."

"I do motor repairing and general machinery installation work and this combined with my restaurant work keeps me pretty busy."

A humorous note was injected in the talk when I asked if he ever employed any Caucasians.

"I used to," he said, smiling, "but it didn't work and neither did they. You know, the Bowery is just around the corner and this proved a great temptation.

"I have two Chinese boys with me now who are learning the business and I find that as most of my customers are Chinese the boys get a better understanding of what is wanted, due to their ability to speak the language, than the average white electrician."

Speaking of collections, Mr. Marr said, "I seldom have to bill my customers more than once and those who live in the vicinity and hold to the Chinese customs concerning 'sin youin', which is Chinese for debt, have a high sense of honor and like to pay cash for their work.

"Naturally this is clean business and is why I say that contractors are overlooking something if they let Chinese work get away from them. In my case it involves very little bookkeeping and I find it very acceptable."

"Some of the restaurants have adopted American methods but in either case it will usually be found that the bills are paid on time."

While we were talking two boys came in with fans to be repaired and a third with a message that Mr. Marr was wanted by a firm of importers to take measurements and give advice on the installation of several fans.

"I found a peculiar problem when I first started in business here," he said.

"The average contractor that had been doing business with the Chinese merchants seemed to take the attitude that they had no knowledge of what they wanted and very often the contractor made a practice of doing questionable work with attendant high bills. Very often he wanted to, and did, sell high priced fixtures that did not fill the requirements but did fill his pockets."

"Naturally electrical work in this section was soon at a standstill. I don't mean to say that there were not conscientious workmen doing business here, there were, but the general tendency was the other way."

"Doubtless this same problem has been met by other contractors but with the Chinese it was different, mostly because of the language and the inability to get clear understanding. People thought they could be imposed upon. They could—but not twice."

George L. Marr was born in San Francisco and educated in the public schools. His first business experience was with a Chinese contractor of that city and for 12 years he read and studied everything that came his way and touched on electrical contracting.

Just before the war he happened to be in New York and he realized the need of a contractor in the Chinese section. During the war he served in France with an American regiment and after being discharged decided to fulfill that need. His present lucrative business is the result.

"In conclusion," Mr. Marr said, "I believe I supply a real need here and the way my business has grown, proves my belief. But then, that is the secret behind any business success."

## Westinghouse Head Sees Stable Business Ahead

At the annual meeting of the Westinghouse Electric & Manufacturing Company stockholders held on June 10, President E. M. Herr forecast a stable volume of business for the ensuing year.

"The volume of business continues on a satisfactory basis," he said, "and without material variation either up or down. The outlook for the year is of rather stable conditions in volume of business taken and, consequently, of shipments of our products."

F. A. Merrick, vice president and general manager was elected a director.

## Louisville Launches Red Seal

Louisville is plunging ito the Red Seal campaign with considerable enthusiasm. It was launched on June 15 by the Electric Club of Louisville at a meeting of the leading architects, builders and realtors.

Special two color letterheads, top of which is shown above, have been printed. They are very attractive.

An advertising campaign has been started, one of the first advertisements being reproduced to the right.

## Plumber Figures 70% Overhead on Labor

Editor, THE ELECTRAGIST:

We enclose our check for $1.00 for which please mail us 5 copies of the Electragist for May, 1925.

The first article in the May issue by Laurence W. Davis appeals to us very strongly as we have been using his method of allocating overhead to productive labor for about 7 years. We wish to distribute a few copies of this magazine among some of our local competitors, to whom we have been preaching this method for a number of years without result.

Last year our business was divided as follows:

| | |
|---|---|
| Steam Department | $166,666.25 |
| Plumbing Department | 106,640.20 |
| Total construction | 273,306.45 |
| Store sales | 61,420.88 |
| | $334,727.33 |

We figure our store sales overhead at about 20 percent, and use a percentage of 70 percent on productive labor for our construction department.

H. W. LLOYD, *Treas.*,
Wyckoff & Lloyd Company.

*Announcing*
The Red Seal Wiring Plan For Complete Electric Service
No task can be done well without the proper tools. The very best electric service can be delivered to your home, but it will be of slight value unless properly applied to your needs.
Standards of living have increased immeasurably since the introduction of electricity into general use. The small home owner has at his disposal conveniences which the wealthiest person could not command a few years ago. Inventive science has placed at your disposal electric devices which enable you to light your home properly and perform the hardest household tasks with ease and dispatch.
It is to your interest as a user of electricity to equip your home with the latest and best of these devices so that you may obtain the maximum benefit from your service.
In order to assist you in doing this, the Electric Club of Louisville, through its Co-operative Committee, representing every branch of the electrical industry in Louisville, is sponsoring the
*RED SEAL PLAN*
*to promote adequate wiring for convenient electrical service in the home.* This plan has been developed and is licensed by the Society for Electrical Development, a national organization devoted to the promotion of safe, efficient and economical electric service.
The Red Seal Plan establishes a standard of wiring applicable to homes of every size. The specifications as drawn up by a local committee have been devised to suit the needs of the user of electric service—they specify the number of outlets which should be placed in every room in order to make the wiring job really complete.
When any home, new or old, has been wired in accordance with these specifications it receives a certificate attesting that fact, and a Red Seal insignia is prominently displayed on the meter board. *A home equipped for electric service under the Red Seal Plan is a home with the stamp of official approval on its electric service.*
The Red Seal Plan applied to a home costs its owner nothing in the way of license fee or special permit; it simply means that it is wired in accordance with standard specifications as to quality of workmanship and number of outlets.
*The Red Seal Plan is not an impossible ideal—it is a working standard of practice.*
ELECTRIC
HOME
Electric Club
Co-operative Committee
51 Kenyon Building. F. A. Hamel, Managing Director.

# The Fallacy of Free Service

## How Other Retailing Industries With a Mistaken Policy of Over-Guaranteeing, Similar to that of the Electrical Contractor-Dealer, Have Been Able to Meet this Problem Successfully

By H. H. STINSON

AMONG the many difficulties with which the electrical contractor-dealer has saddled himself, the guarantee on electrical merchandise, with its concomitant of free service, is one of the worst. The dealer usually receives a margin sufficient only to take care of his overhead and leave him a very small profit. Unless he conducts his business very economically he has not that small profit left, even providing that all his sales are for cash and that each sale entails only the services of the clerk who disposes of the merchandise over the counter.

But when he sells an iron or a washing machine or a vacuum cleaner and guarantees that it will run satisfactorily for a year or be repaired free of charge, he is laying his business open to all kinds of unexpected drains of time and money. That piece of merchandise may not come back for free repairs at all during the guarantee period, since electrical goods made by reputable manufacturers are becoming more and more fool-proof. But electrical mechanisms can be and are unconsciously abused by many users, due to the general public ignorance on the subject and the dealer is called on very often to live up to his guarantee and service the article free.

Every service call costs somebody money and if the merchant guarantees something, nobody denies that he is the person who should pay for the service. But oftentimes it is the manufacturer who fixes the guarantee terms and the retailer is penalized according to a set of regulations which he has had no part in formulating. For instance, many machines are guaranteed to give perfect service for a period of twelve months. If there is anything wrong with material or workmanship there should be a readjustment in favor of the customer. Beyond that however, as happens often, the failure is due to the negligence of the user and the guarantee still binds the retailer.

Another factor enters into the electrical dealer's free service problem. It is the custom of selling large-unit electrical merchandise for a few dollars down and so much a month. As long as there is any money owing on a machine, the dealer is forced to give way to the customer in all disputes concerning service. He cannot afford to do otherwise since offending the customer means that he will be unable to collect another installment until the difficulty is patched up to the customer's satisfaction.

The electrical field is not the only one which has had sad experience with the mistaken policy of over-guaranteeing and the resulting high cost of free service. Merchandising includes service as well as supplying the article itself and the question has always been: Where does service leave off and self-protection begin? In other words there is a point where keeping a few unreasonable patrons satisfied penalizes a business more than the total loss of their trade would.

**THIS is the concluding article of a series of four discussing how certain trade practices that are particularly burdensome to the electrical contractor-dealer have been handled in other retail industries. Mr. Stinson spent months making this study and this much is apparent: Our greatest retail problems are not peculiar to the electrical business but are natural problems of every retail business. It is true that the electrical dealer's problems are colored by certain conditions peculiar to the industry, such as central station merchandising policies, but so does every other industry have its little peculiarities. Many of our problems are being solved in other industries. This is the encouraging part. If others can be successful so can we—all it needs is honesty of purpose and unanimity of action.**

**—The Editor.**

Some branches of retailing are having the courage and foresight to meet this problem face to face and to try to work out a solution which will safeguard their interests and still not arouse the enmity of the buying public. Where ever a large majority of the dealers in any one field presents a united front, the public has quickly fallen into line, but when an industry is divided among itself, the public naturally deviates to that side which promises most free service. Unanimity in any policy is absolutely essential to its success.

### Jewelry

In the jewelry retailing business may be found one of the best examples of what can be accomplished when a majority of the reputable dealers adopt the same policy and do it boldly. Since the advent of the wrist watch for women; jewelers have experienced much grief in trying to keep the watches running for twelve months. It would be hard enough to persuade the tiny and fragile mechanisms to give satisfaction for that length of time if they were to be put in a glass case and shielded devotedly from all shocks and blows. Banged about, as most of them are on the wrists of their wearers, such a thing as guaranteeing perfect service for a year is ridiculous, yet the trade did it because men's watches had been guaranteed for the same length of time. Within the last few years the better-class jewelers, who are unwilling to promise what they cannot perform, have seen the folly of this guarantee and have reduced the period to six months. Moreover they pledge themselves to make good for defective workmanship and material only, not, as they formerly did, for everything imaginable.

The usual guarantee agreement reads as follows: "We guarantee men's watches for one year and ladies' wrist watches for six months after date of sale. In case of accidental breakage, as of balance staff or jewels, which only

break through accident to the watch, we charge for repairs during above period. Perfect condition on date of sale (barring slight regulation to body motion) being guaranteed, if unsatisfactory performance develops, it must be reported and the watch returned within the period above. If we find the watch has not been damaged or broken we either exchange or repair the movement free of charge."

As a matter of fact most jewelers are inclined to soft-pedal the guarantee, other than to tell the customer to bring the watch in for regulation. If a watch needs repairs it is due in nine cases out of ten to some fault of the user in handling it and if the retailer has talked much about the guarantee in the beginning, it is hard to get the idea of free service on any and all repairs out of the customer's mind.

Where other guarantees in the jewelry trade are concerned, they mean little except that the article is as represented. Some plated silverware is guaranteed for fifty years but what user will bring back two or three forks if the plating happens to wear off in twenty or twenty-five years? The guarantee on a diamond is actually only a list of its qualities and size and no jeweler of repute will fake that.

Even plated watch cases are no longer stamped with the various legends of ten, twenty or twenty-five years. The practice now is to denominate them as 14-karat or 18-karat gold plated.

The jewelry trade is rapidly putting the guarantee where it belongs, namely, as a pledge that the article sold is as represented, and not as a contract to perform minor repairs free whenever the customer feels like demanding them.

### Hardware

Hardware retailers also have a free service problem to worry about, but individually and collectively they seem to be more courageous about it than the average electrical dealer. They, too, sell a good many electrical appliances but few of them attempt to do any repair work. If there is anything the matter with a machine they consider their duty done when they have returned it to the factory and collected any charges on it when it is returned.

Where tools and household hardware are in question, retailers are apt to be more generous in servicing. Broken handles are usually replaced in hammers, hatchets, axes and garden tools if they break within a few weeks after the date of purchase. Nuts and bolts are often replaced on lawn mowers without a charge being made.

But hardware retailers in small communities, who act also as distributors of agricultural implements, customarily charge for repair work. Most of this work is done away from the store and a charge is usually made for labor even during the guarantee period, though parts are supplied free.

Nevertheless merchants in this field would like to get away from the unreasonable guarantee. As one man, who has made a study of distribution in the hardware industry, expresses himself, "The hardware retailer feels he is being unjust to himself and to the community when he guarantees complete satisfaction from an article which is to be used and abused by someone else. Making good on such a guarantee means a loss to himself and that, continued, means an ultimate loss of his services to the community."

### Groceries

Free service in the grocery trade is a misnomer. There is, of course, not a great deal of that kind of service whereby a grocer replaces something defective. When that occurs the retailer is usually able to pass the buck right back to the wholesaler without any loss of time or money.

The service a grocer does render consists of a highly-expensive delivery system and an equally costly charge-account policy. But neither of these services are free. Anyone who doubts this need only compare cash-and-carry store prices with those of charge-and-deliver stores.

Herein lies the differences between the retail grocer and the electrical merchant. Persons who want to dispense with the bother of going to market, paying cash for each purchase and carrying the packages home, expect to pay for the elimination of this work. They have been educated to it through long years when that was the sole plan of business in the victualing industry.

Yet the person who buys a washing machine and calls for free repairs six or seven times during the guarantee period expects the same terms as the person whose machine runs through that whole time without being touched by the repairman.

It goes back to the question of education. The present attitude of the public is undoubtedly due to the practice of the central station companies when electrical appliances were first introduced. At that time any and every inducement was offered a buyer in order to get the machine on the line and keep it on. The public was started out wrong in the electrical appliance game.

### Automobiles

Anyone whose experience includes owning an automobile twenty and even fifteen years ago, remembers the sweeping guarantees that used to go with each machine. For the space of a year anything wrong with the machine, short of its absolute demolition in an accident, was repaired and labor and parts were supplied free.

That policy has departed to a forgotten limbo in company with seven-cents-a-gallon gasoline and the motorist pays through the nose nowadays for all service rendered. Guarantees range from ninety days to six months and are on a strict basis of defective workmanship and material. Even when defects are remedied, labor is charged for during the guarantee period.

It is a far call from the days when the auto dealer touched his head thrice to the floor whenever a customer stepped into the office. The dealer saw the handwriting on the wall. He could not give his profits away in limitless free service and still have any profits left at the end of the year. He had to modify his policy or go out of business and he chose to change his policy.

### Tires

Another branch of the automotive industry, the tire retailing field, has seen just as complete a reversal of service policy. At one time dealers vied with one another to see who could render the most service gratis to the tire-using public. Fleets of service cars were ready day and night to dash to the rescue of some stranded motorist who might be miles away. No charge was made for the service and the dealer's only hope of return was that the owner of the car might require a new tube or might buy his next set of casings from the dealer. Sometimes this hope materialized but most of the time it did not and the dealer was spending a great deal of money to create a little good will.

Later this free road service was limited to patrons only, all others being charged a standard service fee. Now, with the wide use of demountable rims

which enable the motorist to replace a flat tire quickly and easily, road service is a negligible factor in a tire dealer's overhead.

A second change has come about, in that tires are no longer guaranteed on a basis of mileage. This operates to the advantage of both dealer and manufacturer. Under the old system of seven, eight and ten thousand mile guarantees the dealer was always in hot water when it came to adjusting for mileage on defective tires. It is impossible to tell by examination of the tire how many miles it has been driven. If the dealer rebated for the mileage claimed by the user he was in most cases cheating himself and the manufacturer. If he did not he was incurring the ill-will of the customer.

The "gyp" dealer—there were plenty of them in the game—also took advantage of this policy by granting a small adjustment to the customer, raising the ante considerably when returning the tire to the factory and pocketing the difference when the check came through. The manufacturers stopped this by mailing rebate direct to the customer.

Guarantees on tires now read that all casings showing defective workmanship or material within a period of sixty days after they are put into use will be replaced. It is a reasonable agreement, for any tire that goes bad in that time should be replaced and any that goes through two months of driving without proving a fault is entitled to be considered unblemished.

The tire industry still has its troubles but the question of free service has practically vanished. Circumstances, such as the introduction of the demountable rim, have helped in disposing of it, but the dealers have had to work out the rest of the solution and they have done it well.

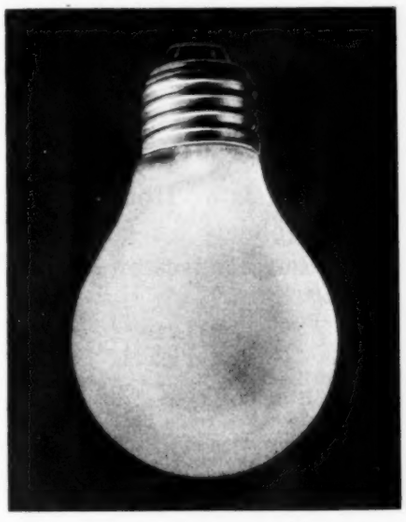
### In Conclusion

Service will always be necessary in the electrical merchandising game. No matter how much study and skill the manufacturer puts into his product it is not possible to make things fool and trouble-proof. A black sheep is bound to crop up every so often. Wind tunnel tests indicate to aeronautical engineers the approximate behavior of an aeroplane model but each individual plane made from that model must be tested in actual flight before its virtures and vices are known.

Service there must be, but such a thing as free service is a fallacy. Somebody pays for that service—either the dealer or the customer. The task before the electrical dealer is to determine what amount of it the customer is entitled to and how much he himself can afford to supply free and then make the two sums equal each other. Self-protection is the first law of existence in business just as in anything else, and the electrical contractor dealer must obey it sooner or later.

# New Type of Mazda Lamp Announced by General Electric

THE General Electric Company announces the first unit of a new line of MAZDA lamps embodying the most outstanding achievement of the last ten years in the art of incandescent lamp manufacture.



**Shape of First Type Being Manufactured**

The principal feature of this new line of lamps is the inside frosting of the bulb which leaves the exterior surface smooth so that it will not collect dust or dirt. The inside frost is an excellent diffuser yet absorbs little more than a clear lamp. For years lamp manufacturers have tried to produce lamps with a frosting inside the bulb, but have always been unsuccessful until the recent discovery by research engineers of the General Electric Co.

As the new line of lamps will replace both round and straight side bulbs, a composite bulb, pear shaped has been adopted. Due to improvement in the filament and other features of construction, the lamp is more rugged than previous lamps for general lighting service.

The new line represents not only better light for less money to the public, but also embodies a program of standardization whereby the new lamps in possibly five sizes may eventually replace more than forty various types and sizes of present lamps.

The first lamp of the new line is a 25 watt size, made available to the trade as of July 1. This lamp is intended primarily for residential use and may eventually replace twelve previously manufactured types of lamps, now made in four shapes, including straight-side and round type, and made in three finishes.

Other units of the new line of lamps are being developed at the present time to take care of all general lighting service.

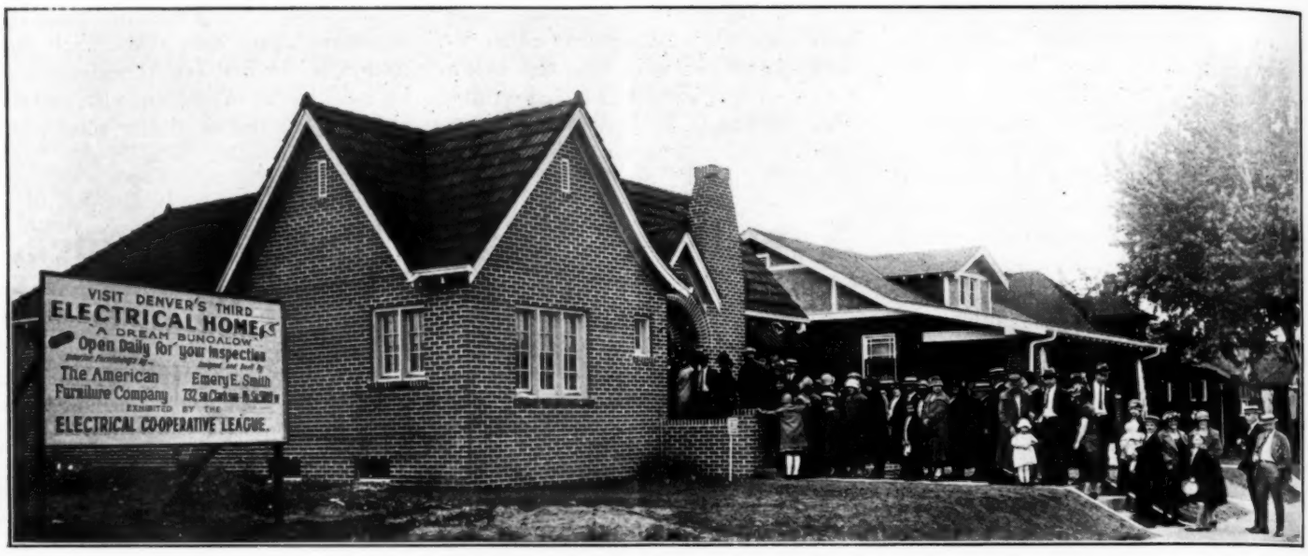
## Police Establish Radio Net

Something new in the line of police signalling was shown at the recent International Police Conference held in New York when radio engineers from the Bell telephone laboratories demonstrated a radio receiver that is to be installed in all police stations and by which police headquarters will be able to signal by means of a lamp or bell. any particular station, or group of stations, or all of the stations within the network.

For transmission the apparatus includes a selector key and an audio frequency oscillator which is connected to the radio transmitter of WNYC.

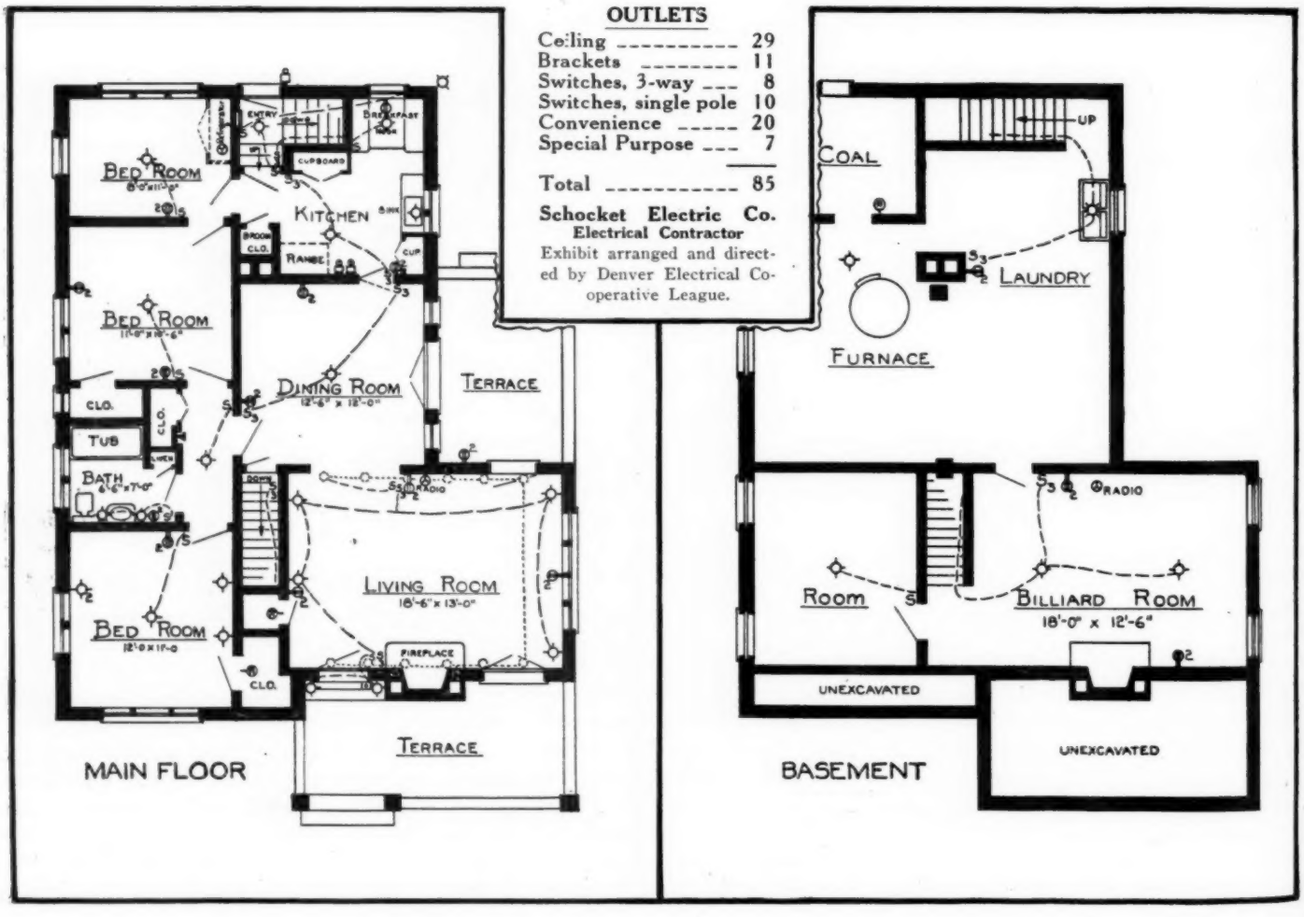
The operation of calling each station resembles that by which a train dispatcher calls the various tower-men along his telephone line. Levers in a small box on the sending operator's table are set to the number of the station wanted, and a corresponding number of pulses of 3,000 cycle alternating current are sent into the radio transmitter.

An unusual feature of the radio receiver is that there is no tuning adjustment accessible, as the sets are designed for use at one frequency and all necessary adjustments are made within the set at time of installation and locked.




# Denver's Third Electrical Home

## Lighting Laid Out on Basis of Home Lighting Essay Contest Instructions, With Emphasis on Small Glass Shades Sells Three Other Houses on Same Plan



# Estimating for Electrical Contractors

## Lesson No. 7—House Wiring

By ARTHUR L. ABBOTT
Technical Director, Association of Electragists

**Previous lessons were devoted to the estimating of installations in Large Buildings. The next few lessons are devoted to House Wiring. This month the several factors affecting house wiring costs are discussed and data presented on Services. Other installments will take up branch circuit cost for the different types of wiring for old and new houses.—The Editor.**

ALMOST universally, house wiring is a highly competitive branch of the electrical contracting business The individual jobs being small and plentiful, it has attracted the man with small capital, and in many cases, with little or no business experience. In most communities the result has been that prices have been hammered down to so low a level that the field has virtually been abandoned by the larger firms, and those that are left have little time for the systematic study of costs.

It has been a common practice to estimate all kinds of house wiring on the basis of a fixed price per outlet to cover the entire cost of the job. It should be evident to any one that this method cannot be accurate, for many reasons the most evident being that the cost of the service always remains unchanged through quite a range of outlets.

For example, a certain job consists of 31 outlets, and the actual cost figures are $69.22 plus $17.08 for the service, or $86.30 total. Another job consists of only 18 outlets but requires identically the same service as the first; the cost is $39.56 plus $17.08 or a total of $56.64. The total cost of the first job is $2.79 per outlet, and of the second job $3.15 per outlet. This is not an extreme case.

The law of averages, and the fact that in any given community there is a marked similarity in most of the house wiring jobs, have been the salvation of the contractor who uses the total-cost-per-outlet method. If a contractor uses such an average figure, and all his competitors do the same, it is true that the *average* actual cost for all his jobs should be close to the *average* figure used for estimating. However, one shrewd competitor who estimates each job accurately will upset this condition. The "per outlet" man will in most cases be either too high or too low, and with intelligent competition the contracts he will secure will in most cases be those on which his price is too low.

It is obvious that the most accurate method of estimating any kind of house wiring is to procure a set of plans, lay the work out completely, take off a list of all material required, and figure the labor by making a standard time allowance for each item of material. However, the cost of making estimates in this manner is more than the traffic will bear. In order to be practical the method, while it must be accurate, must also require a minimum of time.

The method which will be explained here meets all requirements as to accuracy if properly worked out, and after the preliminary calculations have been made it enables the contractor to estimate any ordinary house job in a very few minutes. Briefly, the method is as follows:

The work is separated into two divisions: (1) The service, including entrance switch, meter loop, branch circuit cutouts, ground etc. (2) the branch circuit work. If bell work is to be included in the wiring contract, this becomes a third division.

A complete list of material is made up for each standard type of service and the hours of labor for this division of the work is determined. By pricing this material and labor at the contractor's costs the total cost of each type of service is found. In the same manner, the cost of each kind of outlet is arrived at by listing the material and labor required.

A summary is then made showing all these costs. A fixed percentage of markup may be added to each item, thus providing a list of selling prices from which the total selling price of any job may be very quickly computed.

Like every other short-cut, this method has its limitations. In order that these may be well understood, it will be well to consider some of the factors which influence the cost of house wiring.

House wiring jobs may first be divided into the two main classifications of new and old house work. These are further subdivided according to the type of wiring installed. New houses of frame interior construction may be wired with knob and tube work, armored cable, flexible or rigid conduit. The wiring in old or already-built houses may be knob and tube, armored cable, or flexible conduit. Each of these classes of house wiring jobs is influenced to a greater or less degree by each of the following factors:

1. Type of building construction.
2. Type of service.
3. Density factor.
4. Circuit Loading.
5. Location of outlets.
6. Grade of material used.
7. Efficiency of the workmen.
8. Efficiency of the contractor.

There are also, of course, local variations in material costs and wage rates. These are fully taken care of by using the proper material and labor prices.

The relation of these factors to the cost of wiring is in general as follows:

1. *Building Construction.* The floors may be single or double. If double, the upper floor may be laid directly on the lower, or there may be 7/8 in. wood strips between the two. Ceiling lath may be nailed directly to the joists, or to 7/8 in. strips below the joists. Outside walls may be brick or frame; if brick, the plaster may be applied directly to the brick, or the walls may be furred with 7/8 in. or 1¾ in. wood strips. The house nay be one, two or three stories, with or without a basement, and with no floor or a single floor in the attic. All of these variations will affect the cost of wiring to an extent de-

pending on the type of wiring installed and on whether the house is new or old.

2. *Type of Service.* The term "service" is used here to include everything from the point of connection to the central station company's service wires to and including the branch cutouts and including the ground connection. There are many variations in the local requirements for this part of the job. Service costs must therefore be worked out for each locality.

3. *Density Factor.* The use of this expression was originated by H. C. Turnock, who defines the term as meaning the total floor area of all spaces wired, divided by the total number of outlets. If we consider a very simple case such as two houses, each having four rooms and a hall with a ceiling outlet in the center of each room and hall, but one house being larger than the other, it is evident that the larger house will require more wire than the smaller one. Ceiling heights do not vary a great deal; some of the wire is vertical and some is horizontal, and it will be only the horizontal portion of the wire that is increased for the larger house, that is to say, the house having the larger density factor. The ratio between the horizontal wire and vertical wire has a different value for each different kind of outlet—ceiling, bracket, switch, and convenience outlet. The practical application of the density factor in computing material quantities therefore becomes very difficult and complex. The estimator should bear in mind, however, the fact that a change in the density factor is one of the reasons why data compiled from the cost records of a certain type of house wiring jobs cannot safely be used in estimating work in a job of a decidedly different type.

4. *Circuit Loading.* It is obvious that the wattage allowed per circuit will affect the wiring cost somewhat. The increasing popularity of convenience outlets complicates the situation, because there is much variation in local customs and requirements as to the capacity allowed for each such outlet. The capacity per outlet can reasonably be reduced somewhat as the number of these outlets is increased.

5. *Location of Outlets.* There are two considerations here which affect wiring costs. The first is the degree of accuracy with which the outlets are located. In some cheap types of speculative houses, the wireman seldom nails up a header for a ceiling box, but saves this time by shifting the box a few inches off center so it can be screwed to a joist. At the other extreme is the fine house having many panelled ceilings and walls, requiring that all outlets be located with the utmost exactness.

A second consideration under this heading is the question of whether the position of wall outlets is to be determined on the basis of economy in the cost of wiring or of usefulness of the outlets. Specifications frequently merely call for one or more convenience outlets in a given room, without stating the locations in the room. A very considerable saving in cost can be made by placing these outlets where they are easy to install, without regard to their real convenience for use.

The manner of locating the outlets will depend upon the type of house, local customs, and the contractor's business policy. This factor has a very considerable effect on labor costs.

6. *Grade of Material.* The contractor who buys on price alone can effect some saving on nearly all items of material. This is most marked in the case of switches, convenience outlets and other such fittings. In knob and tube work and armored cable work, a shallow box equipped with clamps is cheaper than a deeper box without clamps, and saves quite an appreciable amount of labor.

7. *Efficiency of Workmen.* 8. *Efficiency of Contractor.* These two factors must be considered together, because the workman's efficiency is to a great extent dependent upon the efficiency of his employer. While it is not easy to change the habit of a slow man, the best mechanics cannot accomplish much if they are not backed up by an efficient employer, and will soon lose heart and cease their efforts to produce if they are not given a fair opportunity to make good.

Under the pressure of competition, the combination of highly efficient contractor and skilled workmen has in some instances reduced the labor costs in house wiring to very low figures. The unit times which will be given in the tables to follow for various types of wiring are by no means the minimum, but represent fair standards for the conditions stated, which should easily be equalled by any reasonably efficient organization. These standards can usually be lowered by any contractor who has a fairly large volume of house wiring business and is willing to make a

**SERVICES**
**For 2-Story 1-Family Houses**
**Based on 660 Watts per circuit**

| | Unit Cost | 1 or 2 Circuits, 2-Wire | | 3 or 4 Circuits, 2-Wire | | 5 to 8 Circuits Inclusive, 3-Wire | |
|---|---|---|---|---|---|---|---|
| | | Quantity | Cost | Quantity | Cost | Quantity | Cost |
| ½" Conduit | $5.50 | 15′ | $0.83 | 15′ | $0.83 | 15′ | $0.83 |
| ¾" Conduit | 7.00 | 20′ | 1.40 | 20′ | 1.40 | 20′ | 1.40 |
| No. 10 Wire | 13.00 | 25′ | .33 | 25′ | .33 | 50′ | .66 |
| No. 8 Wire | 17.00 | 40′ | .68 | 40′ | .68 | 40′ | .68 |
| Meter Service Switch | ----- | 1 | 3.00 | 1 | 4.50 | 1 | 3.75 |
| Meter Board | ----- | 1 | .75 | 1 | .75 | 1 | .75 |
| Cabinet | ----- | --- | ----- | --- | ----- | 1 | 2.00 |
| Double Branch Cutouts | .24 | --- | ----- | --- | ----- | 3 | .72 |
| ¾" Type F E Condulet | ----- | 1 | .50 | 1 | .50 | 1 | .50 |
| ¾" Type L B Condulet | ----- | 1 | .50 | 1 | .50 | 1 | .50 |
| Ground Clamps | .05 | 7 | .35 | 7 | .35 | 7 | .35 |
| Fuse Plugs | .03 | 3 | .09 | 5 | .15 | 12 | .36 |
| Misc. Material | ----- | --- | .15 | --- | .15 | --- | .15 |
| Permit | ----- | --- | 1.50 | --- | 1.50 | --- | 1.50 |
| Labor-Hours | 1.00 | 7 | 7.00 | 7 | 7.00 | 9 | 9.00 |
| Total Cost | ----- | --- | $17.08 | --- | $18.64 | --- | $23.15 |

serious effort to handle his work intelligently and efficiently.

Because of the variations in these factors, and the resulting variations in costs, it would be difficult to prepare house wiring cost data that could be applied under any and all conditions, and the use of such data would involve operations too complex to be practical. It will usually be found however, that practice in any given locality is fairly well standardized with respect to all the factors, or at least the jobs in both new and old houses may be divided into well defined classes.

By analyzing a sufficient number of cost records from one locality and properly classifying the jobs, keeping in mind the effect of the eight factors, it becomes possible to arrive at averages of material quantities and labor hours which will enable one to estimate very closely the costs of jobs falling within the class to which the data applies.

**Services**

The service for a given installation will, of course always be the same, regardless of the type of wiring used for the branch circuit work. Services are now almost universally run in rigid conduit, and the service switch is most commonly located in the basement. The greatest variation in practice is found in the provisions for grounding, local requirements ranging all the way from a single ground connection to a system of grounding requiring 18 to 20 ground clamps.

Examples are given of the listing of material and labor for three kinds of services. It is required in the city where these figures were compiled that the neutral service wire shall not be smaller than No. 8 and that the ground wire shall be of the same size and installed in rigid conduit. Costs should be worked out in this manner for all types of services commonly installed. It is assumed that the contractor always keeps a complete cost record of every job. The service material may easily be selected from such records, and by noting the materials actually used for one type of service on a number of jobs, it is a simple matter to make up a list that will be a reliable average.

The proper time allowance can best be found by having the workmen keep careful records on several jobs of the total labor on this part of the installation. Until this can be done as a final check, the time required may be estimated.

# Cleveland League Members Taking Course in Illumination

THE Cleveland Electrical League has started a special course in illumination for its members at the Nela School of Lighting, with the cooperation of officials at that institution. As soon as the course was announced registrations began to go in and when the first meeting was held on May 25, it was found that 82 men had registered. Those in attendance represented all phases of the electrical industry in Cleveland, contractors, jobbers, manufacturers, dealers and salesmen.

The course consists of six evening classes and all illuminating subjects are being covered with special emphasis on store and industrial lighting. Each subject is presented by an expert in its field.

The registration fee is $5.00 of which $2.00 goes for blueprints, paper, etc. The remaining $3.00 will be returned to those who complete the course. For each session missed a forfeit of $1.00 is made on the fee.

## Wants Prompt Initial Inspection Before Reinspection

Editor, THE ELECTRAGIST:

The writer read the editorial in your June issue on the subject of reinspection. We are all familiar with the abuses in connection with the vending of unapproved electrical materials with consequent evil results, as noted in your article.

It is our belief, however, you have reached an erroneous conclusion in suggesting the contractor work for adequate and regular reinspection. The trouble does not primarily seem to be one which is within his ability to correct. It goes back much farther, and experience has shown the reason for the existence of the present conditions is due to the difficulties that surround the apparently obvious remedy.

The real trouble lies in the fact that until the problem of regular and complete inspection has been fully met the question of reinspection must remain very much in the background. In other words, how can one hope for reinspection, much less adequate and thorough reinspection, when conditions today indicate it is difficult to obtain prompt and proper initial inspections. In our own territory this is certainly true.

Inspectors are working long hours during the day supplemented by extra hours in the evening and on Sunday, to handle the office end of their jobs. Naturally the maintaining of adequate inspection bureaus is a matter of considerable expense. On the other hand, it would seem the fees collected should be adequate to afford a proper and efficient service. If not, then whatever expense may be necessary to accomplish a proper initial inspection of all electrical work must be undertaken.

It is our belief the application of the remedy lies higher up; it is not a problem which may be best handled by the electrical contractor. On the contrary, it should be taken up in a larger sense by the Association of Electragists as a whole, operating through Underwriters' channels, the Society for Electrical Development and all other parties whose interest in the problem may seem assured.

G. E. SHEPHERD,
Shepherd-Rust Electric Co.
Wilkes Barre, Pa.

# Contractor-Dealers Costs May Now Be Departmentalized

## New Forms Developed by Association of Electragists Will Enable Those With More Than One Department to Know the Overhead of Each and Whether or Not It Is Profitable

THE prime purpose of an accounting system is to furnish to the management of the business certain information which is essential to the proper operation of the business. The outstanding weakness of the systems used by most electrical contractor-dealers has been the failure to present a clear and complete picture of the net results of the business with respect to overhead and net profit.

The use of the three forms illustrated here will, it is believed, entirely overcome this deficiency. The forms and the method of applying them have been developed by the staff of the Association of Electragists, International, to be used in connection with the Standard Accounting System published by the Association. They are, however, equally adaptable for use as supplementary to any other system of accounting.

It is a well established principle in business that every sale should carry its own share of the overhead burden. The overhead on retail electrical sales is known to be much higher than on construction work, but in any given contractor-dealer business the total overhead cannot be arbitrarily split up between the two departments with any reasonable degree of accuracy.

### Apportion Expense

In order to obtain the correct figures, each item of overhead expense must be properly apportioned between the two departments. The method of making this allocation is explained in the new Accounting Manual soon to be issued by the A. E. I. A detailed study of each expense item must first be made, and in this way a basis for the allocation of each item is arrived at. It is then only a few minutes work to allocate all items for any one month. Form 17 (upper form on opposite page) the Analysis of Overhead Expense, is provided to show these figures. In practice, the figures taken from the ledger for the total amount of each item will be set down first, under the heading "Total of All Departments," and this amount will then be split up into the two amounts to be charged respectively to the two departments. For the purpose of comparison the amount charged to each item, also the totals, are shown for the current month and for the corresponding month of the previous year. The totals to date for the fiscal year are also shown in the same way, for example, the sheet for the month ending July 31 will show the total overhead charges for each item for that month and the total of all items for seven months of this year, and the corresponding figures for last year.

### Can be Used With Several Departments

If it should be desired to distribute the overhead to more than two departments, as for example to Contracting, Merchandising and Fixtures, the same methods can be followed.

After the total overhead chargeable to each department has been determined, the Profit and Loss Statement, Form 18 (middle form on opposite page) is to be used to compute the total net income earned by each department. The contractor-dealer who uses this sheet will know positively whether or not each department is standing on its own feet and making a profit.

The Profit and Loss Statement is also arranged to show all figures for the corresponding month of the previous year, and the totals to date for the current fiscal year and the last fiscal year.

Markups on future business must include reasonable allowances for future overhead. Future overhead must therefore be predicted as closely as possible, and a ratio between overhead and some other element of the business must be made use of. How shall a man determine what his overhead is today, when his volume of business, and to some extent his expense, are fluctuating from month to month? Shall overhead in the contracting department be figured as a percentage of sales billed, of prime cost, or of labor cost?

The key to the solution of the first of these problems is given by the third form, (lower form) the Cumulative Statement of Overhead Ratios. Under any but very abnormal conditions a close approximation to the contractor's actual overhead at the present time and during the next few months will be the average figure for the *last twelve months to date*. Such a figure, always including a whole year's business, will include the effects of all seasonal fluctuations. Being a figure for the *last* twelve months it is always up to date.

### Provision for Different Ratios

The form provides for entering under each main heading the figure for the current month and for the last twelve months to date. The ratios of overhead to labor cost, to total prime cost, and to sales are shown for the contracting department; and for the merchandising department, the ratios of overhead to prime cost and to sales. In all cases the twelve-months-to-date figures are used.

These overhead ratios will seldom show any violent fluctuation. After the record has been kept up for a few months, the general trend of the ratios will be apparent at a glance, showing plainly whether the overhead is increasing, decreasing or remaining stationary in proportion to the volume of business.

By computing the percentages which the overhead bears to sales, to prime cost and to labor cost on construction work, and to sales and prime cost in the merchandising department, the contractor-dealer is provided with complete data and can make his computations on any basis he chooses.

These forms are all 8½ inches by 14 inches, a size that will fit standard binders of several makes. They are furnished without punching.

ASSOCIATION OF ELECTRAGISTS, INTERNATIONAL
FORM 17

## ANALYSIS OF OVERHEAD EXPENSE

FOR MONTH ENDING _____

| ACCOUNT | CONTRACTING DEPARTMENT | | | | MERCHANDISING DEPARTMENT | | | | TOTAL OF ALL DEPARTMENTS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For Month of | | For Months to Date | | For Month of | | For Months to Date | | For Month of | | For Months to Date | |
| | Current Year | Last Year | Current Fiscal Year | Last Fiscal Year | Current Year | Last Year | Current Fiscal Year | Last Fiscal Year | Current Year | Last Year | Current Fiscal Year | Last Fiscal Year |
| Management Salaries | | | | | | | | | | | | |
| Other Salaries | | | | | | | | | | | | |
| Non-Productive Labor | | | | | | | | | | | | |
| Rent | | | | | | | | | | | | |
| Light-Heat-Power | | | | | | | | | | | | |
| Stat. & Office Supplies | | | | | | | | | | | | |
| Traveling & Ent. | | | | | | | | | | | | |
| Telegraph & Telephone | | | | | | | | | | | | |
| Postage | | | | | | | | | | | | |
| Advertising | | | | | | | | | | | | |
| Taxes | | | | | | | | | | | | |
| Insurance | | | | | | | | | | | | |
| Am'n Expense | | | | | | | | | | | | |
| Warehouse Upkeep | | | | | | | | | | | | |
| Interest | | | | | | | | | | | | |
| Automobile | | | | | | | | | | | | |
| Maintenance & Repair | | | | | | | | | | | | |
| Miscellaneous | | | | | | | | | | | | |
| Allowances for: | | | | | | | | | | | | |
| Loss on Notes & Accounts Rec. | | | | | | | | | | | | |
| Dep. - Furn. & Fixt. | | | | | | | | | | | | |
| Dep. - Automobile | | | | | | | | | | | | |
| Dep. - Tools | | | | | | | | | | | | |
| Dep. - Merchandise | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| TOTAL | | | | | | | | | | | | |

DEPARTMENTALIZING FORMS FOR CONTRACTOR-DEALER BUSINESS

ASSOCIATION OF ELECTRAGISTS, INTERNATIONAL
FORM 10

## PROFIT AND LOSS STATEMENT

FOR MONTH ENDING _____

| | CONTRACTING DEPARTMENT | | | | MERCHANDISING DEPARTMENT | | | | TOTAL OF ALL DEPARTMENTS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | For Month of | | For | Months to Date | For Month of | | For | Months to Date | For Month of | | For | Months to Date |
| | Current Year | Last Year | Current Fiscal Year | Last Fiscal Year | Current Year | Last Year | Current Fiscal Year | Last Fiscal Year | Current Year | Last Year | Current Fiscal Year | Last Fiscal Year |
| SALES BILLED | | | | | | | | | | | | |
| Returns & Allowances | | | | | | | | | | | | |
| Cash Discounts Allowed | | | | | | | | | | | | |
| Total Deductions From Sales | | | | | | | | | | | | |
| NET SALES BILLED | | | | | | | | | | | | |
| Cost of Sales: | | | | | | | | | | | | |
| Merchandise | | | | | | | | | | | | |
| Labor | | | | | | | | | | | | |
| Direct Job Expense | | | | | | | | | | | | |
| Commissions Paid | | | | | | | | | | | | |
| TOTAL PRIME COST OF SALES | | | | | | | | | | | | |
| GROSS MARGIN | | | | | | | | | | | | |
| Overhead Expense | | | | | | | | | | | | |
| PROFIT FROM OPERATIONS | | | | | | | | | | | | |
| Deductions: | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Total Deductions | | | | | | | | | | | | |
| BALANCE | | | | | | | | | | | | |
| Other Income: | | | | | | | | | | | | |
| Commissions Rec'd. | | | | | | | | | | | | |
| Cash Disc. Earned | | | | | | | | | | | | |
| Sundry | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| TOTAL NET INCOME | | | | | | | | | | | | |
| | % | % | % | % | % | % | % | % | % | % | % | % |
| Ratio of Gross Margin to Net Sales Billed | | | | | | | | | | | | |
| Ratio of Total Net Income to Net Sales Billed | | | | | | | | | | | | |

ASSOCIATION OF ELECTRAGISTS, INTERNATIONAL
FORM 10

## CUMULATIVE STATEMENT OF OVERHEAD RATIOS

FOR YEAR ENDING _____

CONTRACTING DEPARTMENT

| MONTH ENDING | OVERHEAD | | LABOR COST | | | TOTAL PRIME COST | | | NET SALES BILLED | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | THIS MONTH | 12 MONTHS TO DATE | THIS MONTH | 12 MONTHS TO DATE | OVERHEAD % 12 MONTHS | THIS MONTH | 12 MONTHS TO DATE | OVERHEAD % 12 MONTHS | THIS MONTH | 12 MONTHS TO DATE | OVERHEAD % 12 MONTHS |
| | | | | | | | | | | | |

MERCHANDISING DEPARTMENT

| MONTH ENDING | OVERHEAD | | PRIME COST OF SALES | | | NET SALES BILLED | | | |
|---|---|---|---|---|---|---|---|---|---|
| | THIS MONTH | 12 MONTHS TO DATE | THIS MONTH | 12 MONTHS TO DATE | OVERHEAD % 12 MONTHS | THIS MONTH | 12 MONTHS TO DATE | OVERHEAD % 12 MONTHS | |
| | | | | | | | | | |

# Instructions for Installing Power Switchboards

IN the past two or three years the Electric Power Club, composed of manufacturers of electrical power equipment, has compiled and published in handbook form, from time to time, instructions for the installation operation and care of various kinds of power devices. The most recent deals with power switchboards and from it has been selected the following paragraphs on their installation. These rules naturally are general guides, detailed data being furnished by the manufacturer with each device.

### Location of Switchboard

In settling the location of switching equipment, first consideration must always be given to personal safety. Continuity of service often demands inspection, cleaning, and repair with a minimum of equipment out of service. Ample space is the best safeguard. Aisles should always be liberal, and particularly so if used when operating disconnecting switches, and when inspecting and adjusting other equipment.

Rheostats and resistances should be located so as to obtain sufficient ventilation, and so that one cannot transmit heat to another or to other apparatus.

Provision should be made for space for future growth.

### Erection of Panels

The switchboard is usually erected on a sill of 6-in. channel iron or 2-in. by 7-in. hard wood, carefully leveled and bolted to the floor after the panels, or at least the panel supports, have been erected on it. The channel sill should also be grouted to the floor by pouring thin concrete into it from the ends and through holes in the top, either before or after the erection of the panel frame. The panel frame is held by bolts tapped into the channel sill, or by lag screws if a wooden sill is used.

Regardless of the frame construction and the method of shipping panels, whether assembled or dismantled, the middle panels should be erected first, and plumbed and braced securely. If the supports are shipped separately the framework should be set up and plumbed first, then the panels bolted to it, first loosely to avoid cracking, and then securely. Flexible washers must be placed between the frame and the panels. If shipped on its supports, each panel will be set up adjacent to the fixed panel and anchored in place. Shimming should be done between the sill and bottom edge of panels to plumb the free edge.

### Frame Structure

Most of the frame structure other than that supporting the panels is today made of $1\frac{1}{4}$-in. pipe with threadless fittings.

All such structures should be well braced together to avoid any flexibility that might tend to affect the operation of oil circuit breakers, or transmit jars from them to the panels.

The frame must be effectively grounded and the paint removed from the pipes and fittings at the points of contact. There should never be more than 3 clamped or screwed points in series for each ground connection.

### Main Connections

Special attention should be given to all joints, whether clamped, bolted or soldered; all contact surfaces must be clean and smooth. Clamping and bolting must be such that the pressure is evenly distributed, and that there is no possibility of the opening of a point due to vibration or to changes in temperature. This is particularly important where the connections and their joints are insulated after installation.

TABLE I—Conductors for Small Current Capacities

| Bare Rod | Maximum Amperes |
|---|---|
| 1/4 in. dia. | 75 |
| 5/16 in. dia. | 150 |
| 7/16 in. dia. | 200 |
| 1/2 in. dia. | 300 |
| Insulated Wire | |
| No. 1/0 A. W. G. | 175 |
| No. 4/0 A. W. G. | 300 |

It should be remembered in making soldered connections that the solder has greater resistance than the copper, and therefore will heat if not sufficiently distributed over the entire joint. A heavy overload may cause heating sufficient to melt the solder, and care must be taken that there is no strain or tendency to separate such joints.

Iron clamps with steel bolts may be used in clamping connections for direct current work; but for alternating current connections and buses the clamps must be so constructed as to guard against magnetic circuits around individual conductors. This is especially important for heavy currents.

All contact surfaces of buses and copper conductors must be thoroughly cleaned with sandpaper and oil immediately before they are clamped together. It is recommended that the purchaser extend this operation to the entire surface of the bars which are not to be insulated after installation, and then give them a coat of transparent lacquer to prevent tarnishing and to preserve a bright appearance. Every trace of oil must be removed before applying the lacquer. It is important that no lacquer should flow on the contact surfaces, and it is, therefore, best to do this work after the joints have been made. When changing buses that have been lacquered, the new contact surfaces should be washed clean with alcohol and then carefully scraped.

There should be uniformity and consistency in the order and arrangement of conductors for the sake of appearance as well as for convenience in caring for the equipment. This should be carried as far as practicable; for instance, on direct current boards the positive bus and connections may be located nearest the board, nearest the top, and at the right hand side facing the back of the switchboard. On alternating current boards, phase 1 may occupy the same position as indicated above for the positive bus on direct current switchboards.

All buses and connections on the switchboard should be designed on the basis of a maximum temperature rise of 30 deg. C. above the room temperature. This limitation, and mechanical stability determine in general the size and shape of switchboard conductors.

For the smaller current capacities, round conductors are frequently used as shown in Table 1.

The accompanying curves show a method of approximating the amount of copper required for heavy buses and connections.

In alternating current installations, iron parts, such as supports, conduits, floor beams, etc., must not be placed between the different conductors of a circuit in such a manner as to form magnetic loops around a single conductor and in dealing with capacities of about 2000 amps. and above, care must be taken to avoid large masses of iron in close proximity to the circuit, as otherwise the iron will heat.

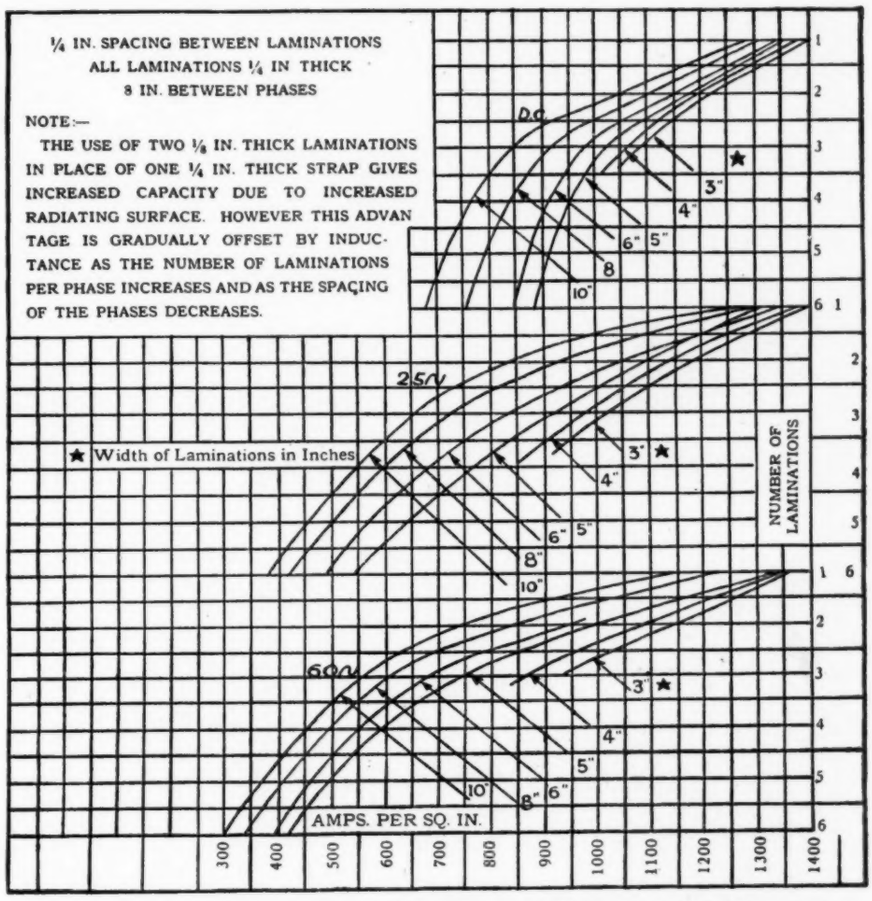
No bare connections above 750 volts should be allowed in the switchboard room, or where connections are accessible from the aisles. Connections for about 11000 volts and above are usually so far out of reach as to be harmless, and so well protected by space insulation as to preclude the necessity for wrapped insulation. The switchboard manufacturers cannot furnish these connections insulated because the taping should be continuous over the connections and the terminals or lugs. This is considered part of the installation material. It is also recommended that the purchaser insulate all connections and terminal lugs for circuits below 750 volts in which enclosed switches or oil circuit breakers are used.

TABLE II—Insulation of Conductors With 10 or 12 Mil Varnished Cambric

| Voltage Range | No. of Layers | Voltage Range | No. of Layers |
|---|---|---|---|
| 0- 1000 | 3 | 15401-17400 | 14 |
| 1001- 2000 | 4 | 17401-19400 | 15 |
| 2001- 3000 | 4 | 19401-21200 | 16 |
| 3001- 4000 | 5 | 21201-23200 | 17 |
| 4001- 5000 | 6 | 23201-25000 | 18 |
| 5001- 6200 | 7 | 25001-26800 | 19 |
| 6201- 7600 | 8 | 26801-28000 | 20 |
| 7601- 8800 | 9 | 28001-30400 | 22 |
| 8801-10000 | 10 | 30401-32800 | 24 |
| 10001-11600 | 11 | 32801-35200 | 26 |
| 11601-13400 | 12 | 35201-37600 | 28 |
| 13401-15400 | 13 | 37601-40000 | 30 |

In general, connections installed in compartments and those operating at 15000 volts and above are not insulated. Since insulation has a tendency to increase the temperature rise of a conductor, the purchaser should not insulate connections designed to be left bare without first consulting the manufacturer.

The proper thickness of insulation for different voltages based on the use of 0.010-in. or 0.012-in. varnished cambric is suggested in Table II. Over the outside layer of varnished cambric there should be applied cotton tape half lapped and finally two coats of flame resisting paint.


¼ IN. SPACING BETWEEN LAMINATIONS
ALL LAMINATIONS ¼ IN THICK
8 IN. BETWEEN PHASES
NOTE:—
THE USE OF TWO ¼ IN. THICK LAMINATIONS IN PLACE OF ONE ¼ IN. THICK STRAP GIVES INCREASED CAPACITY DUE TO INCREASED RADIATING SURFACE. HOWEVER THIS ADVANTAGE IS GRADUALLY OFFSET BY INDUCTANCE AS THE NUMBER OF LAMINATIONS PER PHASE INCREASES AND AS THE SPACING OF THE PHASES DECREASES.
D.C.
25 ~
60 ~
★ Width of Laminations in Inches
NUMBER OF LAMINATIONS
AMPS. PER SQ. IN.
3" 4" 5" 6" 8" 10"
300 400 500 600 700 800 900 1000 1100 1200 1300 1400

**Amperes Per Square Inch 30 Deg. C. Rise Based on 40 Deg. C. Ambient Temperature**

### Ground Connections

A good and reliable ground connection is very important for every switchboard installation. It should be of sufficient capacity to take care of any abnormal conditions that may occur on the system, and it should be independent of the grounds for lightning arresters and other power apparatus.

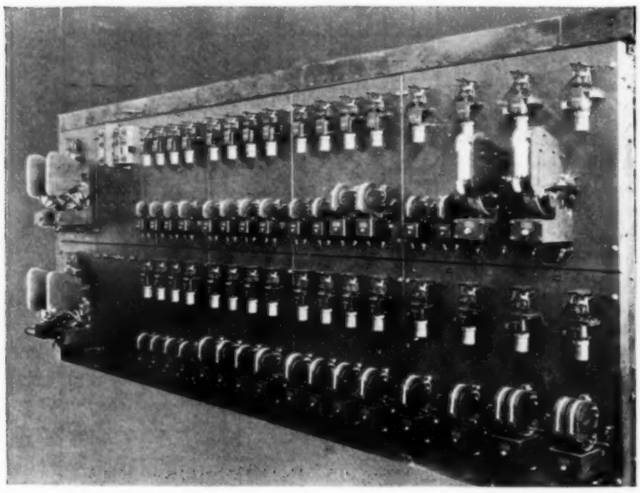
The secondary windings of all current and potential transformers should be connected to ground at the transformers and without fuses. If for any reason this cannot be done, as for instance with instruments and meters having secondary current and primary potential coils, the secondary wiring must be insulated and installed to withstand primary potential with safety.

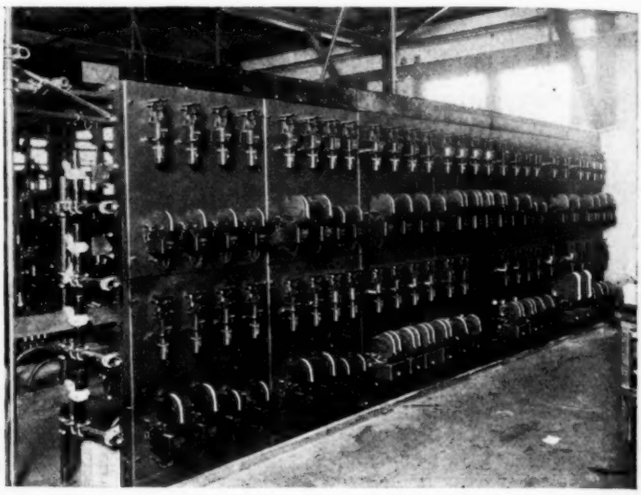
All metal conduits should be grounded.

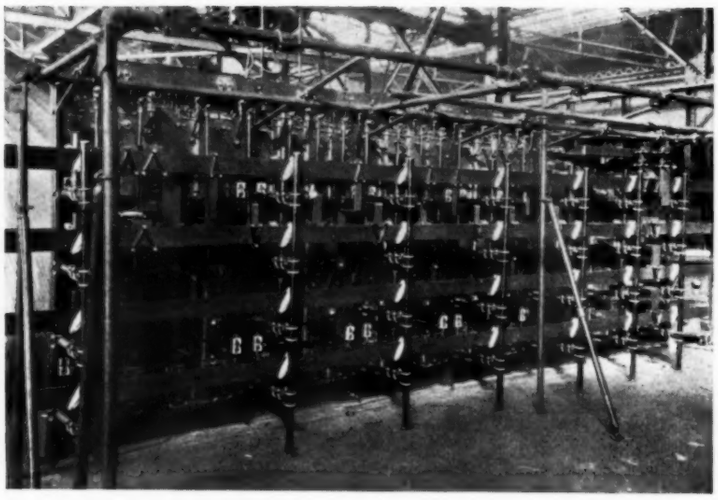
The switchboard frame should be grounded at every upright support, and care should be taken to remove the paint on fittings and pipe to permit a good connection. The channel sill should be grounded in this manner by a perfect contact with the supports.

*Exceptions — An insulated frame should be used for single polarity direct current switchboards of* 700 *volts or less with grounded negative.*

Switchboard devices for operation at 150 volts or more above ground potential should have their exposed metal parts permanently grounded when these are insulated from the current carrying parts and not isolated by elevation or otherwise permanently protected. This rule covers, for example, transformers and alternating current instrument casings, operating mechanisms for switches and oil circuit breakers, oil circuit breaker frames, rheostats, compensators, etc. This is usually accomplished by connection to ground buses, of a cross section not less than No. 2 A. W. G. which should run the entire length of the switchboard, and the oil breaker structure, where the two are separate.





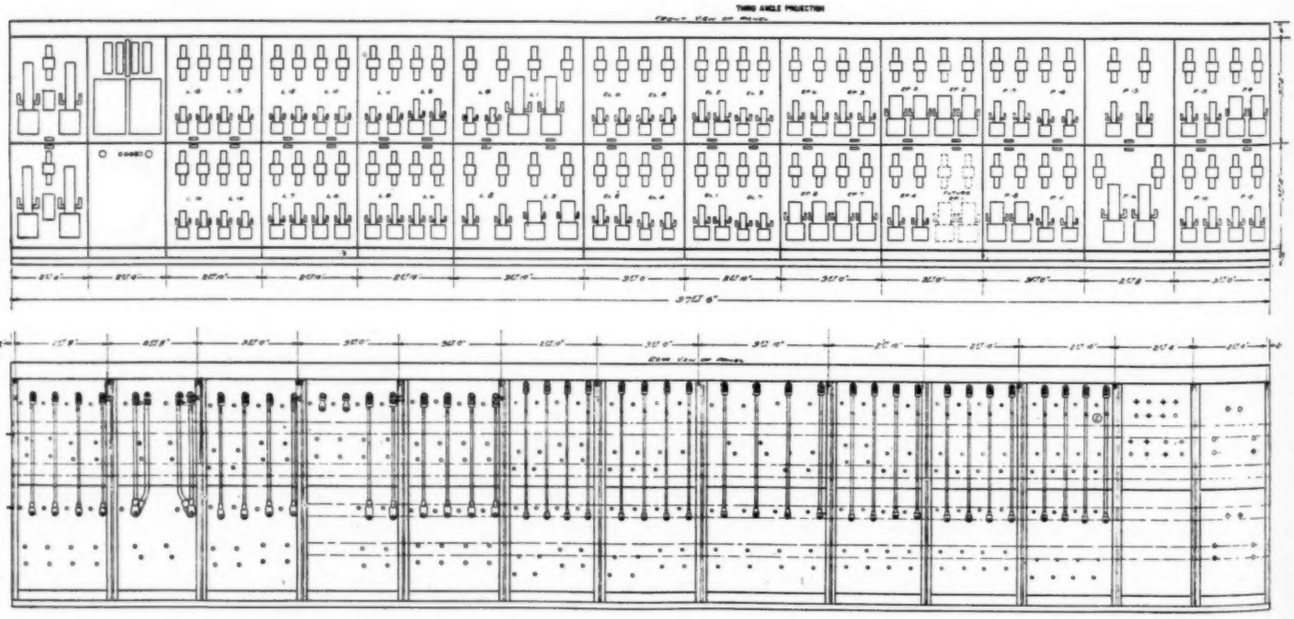


## CONTACTOR PANEL BOARD FOR NEW DETROIT MASONIC TEMPLE

**Above—Main power and feeder distribution control of contactors. Left and right hand sections.**

**Left—Rear view of one section, showing buses and supports.**

**Below—Plan of front and rear of board, showing relative locations of apparatus.**



# Contactors Used for Power and Feeder Circuit Control

## Unusual Methods Employed to Insure Continuous Light and Power Service in the New Detroit Masonic Temple, the Largest of its Kind in the World

By T. HARVEY
General Electric Company, Detroit, Michigan

THE New Masonic Temple at Detroit is the largest of its kind in the world. This building has a frontage of 400 feet, a depth of 200 feet and a cubic content of 11,070,000 cubic feet. Accommodation is provided for twenty-six Blue Lodges, the Royal Arch Chapters, the Council, Detroit and Damascus Commanderies, Michigan Sovereign Consistory and the Moslem Shrine.

Many complex problems were involved in the design of this building—problems in ritual necessities; banqueting 4,700 people; providing four ball rooms, billiard room, swimming pool, bowling alleys and library, to say nothing of the Shrine wing of the building with its 100 individual sleeping rooms, a complete club and dormitories. The design of the structure, therefore, required much engineering as well as architectural study and the question of continuous service in regard to light and power was of paramount importance.

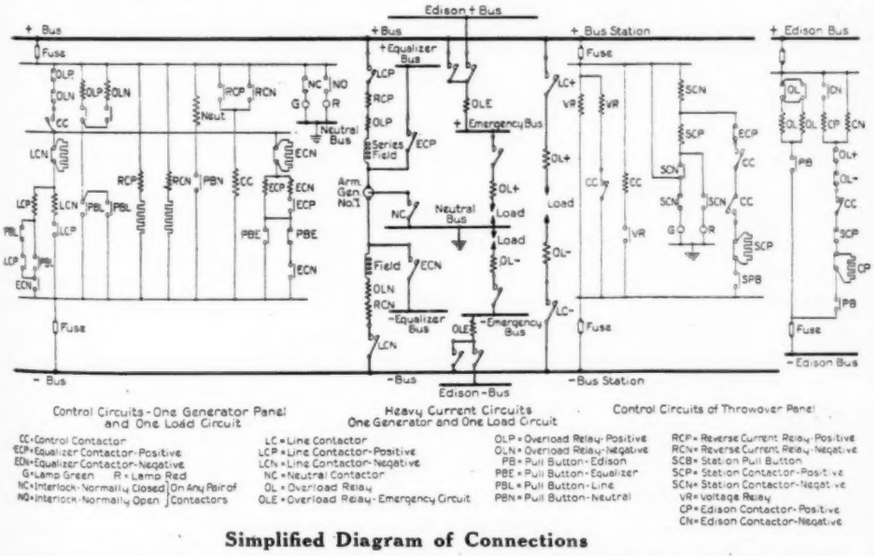
Light and power service for this building is supplied by three direct current generators, 240/120 volts, three-wire. One generator is 200 kilowatts and two are 400 kilowatts, and all three are driven by uniflow steam engines, located in the basement.

The plans provided for remote control of the three generators and of the emergency service, as well as of the feeder circuits, because of considerations of space, convenience and minimum attendance.

The remote control system is of especial interest because this building is one of the first plants to use contactors, or electromagnetic switches, for the control of generator and feeder circuits, these contactors being of a type formerly used for the control of motor circuits.

Each generator has an individual control panel located on the floor below it. The leads from the generator run from beneath the machine through a short tunnel to the control panel, and thence to a set of five bus-bars used for paralleling the three machines. Contactors are used to open or close the circuits in the positive and negative mains, the positive and negative equalizer leads and the neutral line. As the two-hour overload current rating of the 400-k.w. machines is about 2100 amps., two 1500-amp. contactors are used in parallel for controlling the main positive or negative circuits. Six hundred ampere contactors are used for making the equalizer connections, and one 300-amp. contactor for the neutral circuit. For the 200-k.w. machine one 1500-amp. contactor is used for each of the main leads, a 300-amp. contactor for the equalizer, and a 150-amp. contactor for the neutral circuit.

The equalizer and main line contactors provide under-voltage protection by dropping out on failure of power, nor closing again on the return of power unless closed by means of the push and pull switches on the control panels. The neutral contactor will open on failure of voltage and will again close upon restoration of power. The main line and equalizer contactors are so electrically interlocked that the equalizer contactors must be closed before the line contactors can be closed. A time delay, electrical reset, overload relay and a reverse current relay are located in the positive and the negative main line circuits. Inverse time limit relays are used throughout, due to the character of the load. The starting of a large motor or the simultaneous lighting of a great many lamps will cause a momentary inrush of current which would trip an instantaneous overload relay, while an inverse time limit relay will not trip unless the overload persists long enough to overheat the generator or endanger the lines. All relays are set to trip at approxi-




**Simplified Diagram of Connections**

The push and pull buttons for the load and throwover panel circuits are pulled out and held out by a latch when closing the contactors. In the case of those for the line and equalizer circuits of the generators, the top button is pulled out momentarily and there is an auxiliary circuit which remains closed until the lower button is pulled out. This will explain the three symbols for some of the pull buttons and two for the others. All circuits are shown with contactors in the de-energized position.

mately 200 percent load in 20 seconds. A higher overload would naturally cause a relay to trip in less time, and a lower overload in a longer time. On short circuits the action is practically instantaneous.

Some doubt had existed as to the ability of contactors to break current under severe overload conditions. Tests have been made in which only one 1500-amp., 600-volt contactor has easily ruptured 10,000 amps. d-c. at 500 volts without any injury to the contactor. Due to lack of higher currents at the time of test the ultimate capacity could not be determined, but it may be safely stated that the contactors on these generator panels will break the current which would exist on a short circuit up to the limit of the generator capacity to furnish that current. Also, contactors in this case are in both the positive and negative lines and, as the rupturing capacity depends upon the power rather than the current, it can be easily seen that the limit of rupturing capacity of these contactors, if in good operating condition, cannot possibly be reached under any condition that might arise in this particular application.

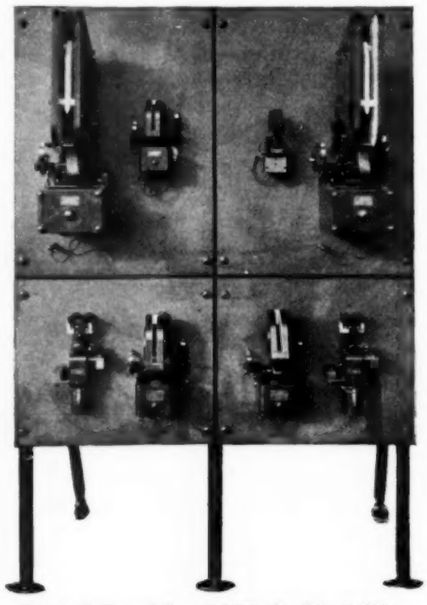
**Layout Saves Material and Space**

The generator bus bars are connected to the bus bars behind the distribution board, located on the same floor as the generator panels and directly beneath the control board from which all circuits, including the generator circuits, are controlled. This distribution board controls the various feeder circuits which are all brought in at one end of the board and connected through their respective inverse time limit overload relays and contactors to either the main or emergency bus bars. This arrangement, a greatly simplified construction, saved cable, buses and considerable valuable space.

There are 16 main lighting circuits of from 40 to 1000-amp. capacity, 8 emergency lighting circuits varying from 40 to 220-amp., 10 main power circuits running from 150 to 1000-amp., and 7 emergency power circuits of capacities from 150 to 500-amp. The branch lighting circuits are two wire, balanced on three-wire mains, and the power circuits are two-wire.

The emergency bus receives its supply from the station bus at all times when there is voltage on the station bus. If voltage should fail on the station bus because of a shut-down of the generators, an overload or short circuit on the station bus, the emergency bus receives its supply from the Detroit Edison Company automatically by means of throw-over contactors. However, in case of a short circuit or a severe overload on the emergency bus sufficient to open the generator protective devices, the Edison service is not connected automatically but can be connected by using the remote control switch on the control board. If the trouble still persists, the overload relays will again trip and the emergency bus will remain disconnected.

The relays are of the same type as those on the generator panels and were selected for the same reasons. A contactor in both the positive and negative side of each circuit opens both sides



**Control Panel for 2,000 K. W. 3-Wire Generator**

of the power circuits and one side of the branch lighting circuits; in this case the opposite line is the neutral which is grounded and, therefore, is never opened. The size of the contactors was determined by the size of the feeders, the contactor rating generally being slightly larger than the feeder rating. The overload relays were set to trip at 200 percent of feeder rating in 20 seconds, although this can be adjusted within rather wide limits to suit any special conditions of protection which might be required on any circuit. All of the feeder contactors will drop out in the event of failure of power on the bus bars and will again close when power is restored without any attention. But, if these contactors are opened by a short circuit or overload, the overload relay must be reset from the control board and the control switch again pulled out and latched before the contactors will close. If the overload still exists the relays will again trip.

Another rather unusual feature of this installation is the use of interlocks to insert resistance into the coil circuit after the contactor has been closed. The contactors are sequenced in the same manner as on the generator panels, the first one to close being in the positive circuit, and the second in the negative circuit. This interlock is placed on the negative line contactor; thus, after it closes, the resistance is in series with the coils of the two contactors and the current for holding the contactors closed is thereby cut down to a minimum. When the contactor is open this resistance is short circuited by the interlock and full voltage can then be impressed on the coils for closing the contactors. The amount of power required to hold these contactors closed varies for different installations depending upon the amount of resistance that is inserted in the coil circuit after the contactor is closed, and which is in turn limited by the voltage at which it is desired to have the contactors open. For instance, if it is satisfactory to have the contactors open at a small drop in line voltage, then more resistance can be used than as if the contactors were supposed to hold in at a low voltage. On this installation the power required to hold the contactor is approximately one quarter of 1 percent of the continuous rating of the contactor itself. The larger contactors take much less power than this and the smaller ones a little more.

The control board is quite unique in design and in its application for building service of this character. It consists of ten panels of black, marine finish slate, mounting edgewise-type ammeters and voltmeters on the generator panels, which also contain the usual equipment for controlling the voltage of each machine. In addition, twin-pull control switches are mounted on the middle sections of the panels for operating the main generator contactors and emergency transfer contactors. These switches are equipped with red and green indicating lenses and lamps.

The feeder panels are equipped with recording watthour meters of the mer-

(Continued on Page 33)

# More than a Third of American Cities Without Wiring Ordinance

## Survey of Situation in 623 Cities Shows Only 397 to be Operating Under an Ordinance—Condition Accentuated by Large Eastern State

SURPRISING as it may seem, more than one-third of the cities in the United States have no ordinance governing the installation of electrical wiring in buildings. This condition was indicated in the results of a study made by THE ELECTRAGIST of local conditions in 623 American municipalities. Of this number only 397 or 64 percent claimed to be operating under an ordinance while 226 or 36 percent had no wiring ordinance.

This list includes virtually every important city in the country. Those cities not represented are for the most part the smaller ones and, while it does not necessarily hold that the smaller places are without ordinances, it is undoubtedly true that a census of the country would show a much larger percentage of small communities that of the larger cities to be without local wiring legislation.

One thing noticeable in the survey was that a greater percentage—63 percent of the places reporting—of cities in the eastern states of New York, New Jersey and Pennsylvania are without ordinance, than any other section of the country.

A number of cities are now working on ordinances and there is every reason to believe that the number of cities with an ordinance will increase rapidly. In a few cases the correspondents stated that an ordinance was needed and wanted to know how to get started.

On the other hand some places reported that although they had an ordinance it was not being enforced. This was voluntary information, no such question being asked. It is not possible, therefore, to say whether or not this exists in more than just a few places.

It must not be supposed that all the places without ordinances are without inspection or any control over wiring installations. In some places the building inspector and in others the fire chief exercise a certain control. Also the Underwriters are very active in many places. In some cities, Philadelphia for instance, where there is no ordinance the Underwriters exercise entire control.

Some cities have made the National Electrical Code the basis of their ordinance, others have gone their own way entirely. Some, like New York, have an ordinance based on the Code of a certain year and because there is no provision for including the changes made in the Code from time to time, these ordinances are now out of date.

Such diversity of ordinance requirement is costing the electrical industry a lot of money each year because of different designs necessary to comply with these local rules. To meet the needs of those places without ordinances, those with antiquated ones and those whose requirements are not in keeping with national standards, a Uniform Electrical Ordinance has been prepared, copies of which will be sent upon request to this magazine.

ORDINANCE SITUATION IN 623 AMERICAN CITIES

| State | Number of Cities: Without Ordinance | With Ordinance | Total |
|---|---|---|---|
| Alabama | — | 6 | 6 |
| Arizona | — | 2 | 2 |
| Arkansas | 1 | 3 | 4 |
| California | 14 | 27 | 41 |
| Colorado | 1 | 5 | 6 |
| Connecticut | 4 | 6 | 10 |
| District of Columbia | — | 1 | 1 |
| Florida | 3 | 20 | 23 |
| Georgia | 1 | 7 | 8 |
| Idaho | 1 | 2 | 3 |
| Illinois | 13 | 29 | 42 |
| Indiana | 9 | 17 | 26 |
| Iowa | 9 | 13 | 22 |
| Kansas | 8 | 20 | 28 |
| Kentucky | 1 | 4 | 5 |
| Louisiana | — | 4 | 4 |
| Maine | 2 | 2 | 4 |
| Maryland | 1 | 2 | 3 |
| Massachusetts | 12 | 26 | 38 |
| Michigan | 6 | 21 | 27 |
| Minnesota | 4 | 11 | 15 |
| Mississippi | 2 | 7 | 9 |
| Missouri | 5 | 6 | 11 |
| Montana | — | 2 | 2 |
| Nebraska | 1 | 3 | 4 |
| Nevada | — | 2 | 2 |
| New Hampshire | 6 | 1 | 7 |
| New Jersey | 15 | 15 | 30 |
| New York | 37 | 24 | 61 |
| North Carolina | 1 | 10 | 11 |
| North Dakota | 5 | — | 5 |
| Ohio | 17 | 20 | 37 |
| Oklahoma | 2 | 8 | 10 |
| Oregon | — | 4 | 4 |
| Pennsylvania | 22 | 4 | 26 |
| Rhode Island | 1 | 2 | 3 |
| South Carolina | 2 | 3 | 5 |
| South Dakota | 1 | 4 | 5 |
| Tennessee | — | 5 | 5 |
| Texas | 2 | 11 | 13 |
| Utah | — | 2 | 2 |
| Vermont | 1 | 4 | 5 |
| Virginia | 5 | 5 | 10 |
| Washington | — | 5 | 5 |
| West Virginia | 5 | 4 | 9 |
| Wisconsin | 6 | 17 | 23 |
| Wyoming | — | 1 | 1 |
| Total | 226 | 397 | 623 |

### Contactors Used for Power and Feeder Circuit Control

(Continued from Page 32)

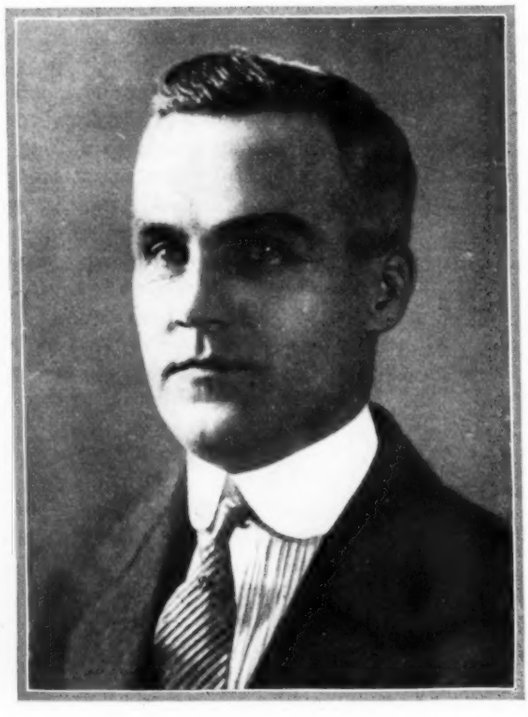
cury type, and the ampere shunts for operating these meters are located on the floor below, behind the contactor panels, and installed on the vertical buses leading to the same. Similar twin-pull switches and indicating lamps are mounted on the feeder panels, each of which operates a pair of contactors controlling some main feeder. This design of control board permits of the use of low potential, as nothing exceeding 125 volts is on the board. All high voltage is confined to the contactor board on the floor below. No soldered joints are used in making any of the main and feeder bus connections as these are all joined by means of Dossert connectors.

The entire switchboard was installed by McCleary Harmon Company of Detroit, contractors. The temple was designed by George D. Mason & Company, architects, of Detroit. All the electrical switching and protective equipment here described was furnished by the General Electric Company. The heating, ventilating and pumping services are operated by General Electric motors with remote magnetic control.

## C. Felix Butte, San Francisco

California is entitled to claim all the credit for C. Felix Butte, for he was born, and educated there and has carved out his particular niche in life, all within the confines of the state. He made his entrance into the world at San Francisco in 1880 and attended the public schools working during vacations for the old California Electrical Works and Electrical Supply Company. In 1903, his education completed, he entered the employ of the Pacific Telephone and Telegraph Company as assistant to the superintendent. Subsequently he took charge of the engineering department. He purchased a half-interest in the Butte Engineering and Electric Company in 1909 and upon dissolution of this firm in 1919, formed the Butte Electrical Equipment Company with himself as sole owner. This concern has made some of the largest electrical installations on the Pacific Coast and in the Hawaiian Islands. Its scope of operations includes underground systems, submarine installations, complete power installations for industrial plants, and complete municipal pumping installations. At the present time it is installing the electrical work in the new 28-story building of the Pacific Telephone and Telegraph Company, the tallest building on the Pacific Coast, and a short time ago it completed an entire underground system, consisting of 85,000 feet of duct, for the U. S. Navy at Pearl Harbor, Hawaii. In addition to being a member of the national, state and local electragist associations, Mr. Butte belongs to the Electrical Development League, the N. E. L. A., the S. F. Chamber of Commerce, the National Credit Association, the California Association of Electrical Inspectors, the Builders Exchange and several other business and civic organizations.

# Electragists You Should Know



## James G. Fox, Greenwich

Fifteen years ago James G. Fox, of Greenwich, Conn., won a scholarship to Middlebury College, but chose instead to learn the electrical contracting business under the tutelage of his father, the late Thomas E. Fox, who, after twenty-five years as superintendent of the Greenwich lighting plant, was then branching out in the wiring game. He has put the intervening years to good use and his store is now one of the most attractive and busiest in Greenwich. Mr. Fox was born in 1892 in Greenwich, where his ancestors have resided for over 100 years. He attended the Greenwich High School, where he was captain of the football, baseball and basketball teams for three successive years, graduating in 1910. He entered his father's business in 1911 and continued there until May, 1918, when he enlisted in the Army. His service included fifteen months overseas, six months of this time with the 315th Ammunition Train at the front and the remainder in Germany with the Army of Occupation. Upon his return in August, 1919, he reorganized his business under the name of "James G. Fox," he being sole owner. The volume of the business increased rapidly, sales billed in 1924 being ten times the amount of business done in 1919, and he now has sixteen persons in his employ. His wiring business includes jobs of all kinds, ranging from private residences to churches, clubs and schools, in three of which he has recently completed installations. He takes an active part in civic affairs, being superintendent of the local fire alarm system, a member of the Contractors & Builders Association, the Merchants Bureau, and the Chamber of Commerce, of which he served three years as treasurer and director. He is a vice-commander of the American Legion and a member of the Lions Club and many other civic and fraternal organizations.

# Radio Service Hints

**The day of the radio fan is fast going by and the great public with no knowledge of radio or desire to know is buying sets. This is increasing the need for service and as a service to the electrical contractor this department is started. Here will be found each month a few short hints on trouble detection, prevention and removal.—The Editor.**

### Antenna Troubles

When talking over the faults of his set with the service man the average customer is apt to pay little attention to the antenna, thinking that because of its simple construction it plays but a secondary part in radio reception.

A New York City dealer who has had considerable experience with a service crew in installing sets, offers the following advice on this subject:

"Whenever a customer comes to me with radio trouble I usually ask first how long the antenna is. I find that this is very often the seat of trouble and that the customer has little idea of its importance. I asked one man last week how long his was and he said, "One hundred feet." I went over the set, could find nothing wrong and then looked at the antenna. It happened to be 130 feet long with a lead in of 45 feet, making a total length of 175 feet. No wonder his set wouldn't work well with this handicap."

"The length of an antenna includes the length of the lead-in and ground wire. Particularly in apartment houses one is apt to find antennas similar to the one I mentioned. The average radio fan has no idea of distance and it is well to investigate for yourself. The result is that a large amount of energy is picked up by such an enormously long antenna, overloading the vacuum tubes and despite the efficiency of the tuning circuits, extremely poor overall receiver selectivity is obtained."

"The solution is: The antenna should be shortened until its length is not more than 100 feet including the length of the lead-in and ground wires. In addition to this a fixed condenser having a capacity of from .0001 to .00025 microfarads may be connected in series with the antenna. This means that the antenna wire is connected to one terminal of the condenser and the other terminal of the condenser is connected with the antenna binding post on the receiver."

### Tube Sockets

According to a radio dealer the most frequent cause of trouble his customers complain of is in connection with the tube sockets.

He also says that dealers sometimes purchase sockets after a hasty examination and later find out that they cannot conscientiously sell them to their customers.

To obviate this he suggests that dealers do not accept sockets made of material that can be easily cut with a knife. He had reference to a socket made of a black material that looked like heavy cardboard or fibre. Nor should they leave a black mark when rubbed across a piece of white paper.

Material that will do this has lampblack in it which is a poor insulating substance. As a rule this class of material will melt under a soldering iron.

### Superheterodynes

A radio service man offers the following concise information on superheterodynes:

Superheterodyne sets have two outstanding advantages, the efficient use of a loop aerial, and extreme simplicity of manipulation, usually two dials with a battery switch. They have, however, one characteristic which should be given consideration when the purchase of such a set is contemplated. They are extremely sensitive to interference in the way of shielding, commercial noises and induction from alternate current wires.

These sets are quite apt to give trouble when used in a steel frame-work building. Masses of metal of almost any nature are quite apt to shield the set more or less, this being true of any set using a loop.

Sometimes the shielding effect is manifested more in a diminishing of the directional effect of the loop than otherwise. Operation of an electric motor in a house is quite likely to be picked up by a set in the form of annoying noise. Violet ray machines, flashing signs, defective trolley rails or wires, elevator motors and contactors, defective electric heating devices and other similar sources of a make and break in an electric current are most certain to produce noises in the set.

### Loud Speaker Troubles

Efficiency from a loud speaker depends on the purity and amount of the current delivered to it from the set. If the transformers distort the current, or sound impulses, the loud speaker will reproduce the sound together with the distortion.

If the voltage applied to the plate circuit of the amplifying tubes is low, the sound may be pure but lacking in volume. If the voltage is too high, the volume will be great but accompanied by distortion.

To obtain the right value of current, the voltage of the "B" battery should be varied between 90 and 135 volts, with variations of "C" battery voltage between 4½ and 9 volts. The 201A type delivers more current than the UV199 type.

### Tube Oscillation

In the operation of the vacuum tube, the nearer the plate and grid are to each other, or the larger the opposing areas of plate and grid, the greater the capacity between them and therefore the greater the tendency of the tube to oscillate.

It has been found, too, that the higher the frequency the greater the tendency to oscillate. This is why in the superheterodyne the frequency is changed to a lower value before passing through the intermediate frequency stages. Also, this greater tendency to oscillate on high frequency indicates why greater trouble is experienced with low wave length stations.

# The Electragist

*Official Journal of the*
*Association of Electragists—International*

S. B. WILLIAMS
Editor

ALFRED BATSON
Associate Editor


## If It Be So

"The large majority of the central stations that are selling electrical appliances have demonstrated by proper merchandising methods that a substantial net profit can be made on the products they sell, without taking into consideration the current revenue producing feature, and their efforts are now directed towards improving their merchandising methods."—*Taken from an address by E. N. Hurley, before the N. E. L. A. convention last month.*

If it be true that most central stations are making a profit on their merchandising it is only because the manufacturers are allowing them discounts far in excess of those allowed electrical contractor-dealers.

## Central Station Views on Wiring

We have before us the report of the Wiring Committee of the National Electric Light Association presented last month at the annual convention at San Francisco. If the statements are representative of central station viewpoints, it is a serious matter.

Early in the report the National Electrical Code is likened to a dictionary which includes new words as rapidly as they have gained a foothold.

"American practice," states the committee, "in regard to codes is, we believe, working in this direction, viz., that new developments shall be tried out under local supervision and that as fast as any of them prove satisfactory to those who want to use them, the national bodies who write and edit the Codes will feel in duty bound not only to put the new developments in the Code if their attention is called to the matter, but will also feel bound to search for the new developments that have been accepted by a reasonable minority, just as the editors of dictionaries search to find what new words are in sufficient use to warrant inclusion in the dictionaries that intend to tell the whole story of the language, the language that people want to understand as well as use."

This is a dangerous sentiment; namely, that those who write and edit codes will "feel in duty bound" to put in new developments "as fast as any of them prove satisfactory to those who want to use them." Should laws be passed permitting the free toting of revolvers because yeggs want to use them?

Again later in the report attention is called to inspection fees resulting either in small work not being done or not being reported for inspection and in this connection states:

"Some inspection departments, however, are working on the basis of inspecting only enough of the jobs done by good contractors so that they can be sure that that contractor is maintaining the quality of his work.

"The advantage of this, especially in the case of small jobs, is so obvious that member companies interested in reducing the cost of wiring to their customers might well consider this method and take it up with the proper authorities."

What a wonderful opportunity for graft!

While protesting that they are in favor of safe and convenient wiring, the committee state:

"Any shibboleth of 'All-Metal' is clearly disadvantageous for the public as compared with our criterion 'The best possible, all things considered.'"

One doesn't have to look far for the meaning of "all things considered." It is price. The criterion translated in true fashion would be "The best possible which will bring the most customers on central station lines."

"All-Metal" is a program started by the Electragists as a public benefit. It is recognized in fire districts as being the safest.

Are we to infer from the report that the central station people are opposed to All-Metal?

## Sticking Together

There are around ten licensed electrical contractors in Gary, Indiana. Six of them are members of the local association which holds meetings every Wednesday and Friday at 4:30 in the afternoon when they discuss every thing that has come up in the past two days or is liable to come up in the next two days.

"We find our organization is the most valuable asset we have," says A. B, Harris of the Lighthouse Electric Company who is secretary. "It is not the policy of any one to hog all the jobs that come up. We endeavor to get a fair price for every job we do.

"There isn't a lot of red tape to our organization; we have no constitution or by-laws, no regular offices or a name, nor a fine for any violation to any agreement. Need-

less to say, we have many things come up that have needed attention but in every case we have been able to patch up trouble and "Stick" and there is not one that wants to go back to the old cut throat game."

That's how it's done—"Sticking Together." If the contractors in more cities would learn to be men and trust each other like men and Stick Together there would be less complaints about price cutting and carpet bagging.

## David and Goliath

So large and strong was Goliath that the Philistines were willing to stake victory on his ability to overcome any living thing. In his arrogance he was slain by the boy David armed with only a sling and a smooth pebble from the bed of a stream.

Many morals have been drawn from this simple Bible story and we are constrained to add another.

The modern Goliath of the local electrical industry is the central station, big and powerful. Generally speaking this electrical giant is lovable and fair and seeks to use some of its bigness as a protection for its smaller companions in the industry.

Every now and then, however, one of them breaks loose and like Goliath stands out in front and boasts, that all may see his greatness.

The most recent occurence was in Denver where the local power company was submitting to the voters a new franchise a year ahead of time.

Without attempting to state the conditions of the new franchise, the facts are that the Denver utility was following a precedent laid down by other Doherty properties of entering into strong competition with the contractor in installation work.

They cared not if any or all the contractors were hurt by any actions of theirs. More load was their shibboleth and if low prices for wiring would bring customers then the prices would be made low.

Even in the office of the parent company in New York was the same attitude maintained.

Some of the Denver contractors saw in the franchise election an opportunity to teach the utility a lesson. The proposed franchise was analyzed and the facts given to the public.

The franchise lost by two to one.

Most power companies are the contractor's best friends, but when one becomes careless with the rights and the business of others in the industry it can be brought to terms.

Central stations all have one vulnerable spot—public relations. Almost every community is willing to believe anything bad about a utility and particularly does the story gain weight when it comes from an electrical man.

A utility cannot engage in cutthroat merchandising or in the contracting business without losing money. This loss must be met by the consumers in rates that would otherwise be lower.

It is only the thoughtless central station men who will engage in the contracting business. It has been demonstrated that when the utility starts to do wiring, prices are slashed and soon there is less business done in that town than there was before. The utility does a lot of wiring but the others are out of it.

Besides, as the thinking utility men point out, when a utility does a wiring job it has to guarantee service and installation and the result is that it is constantly being called on to service such customers free of charge.

Electrical contractors do not need to let any central station walk all over them. Where there are differences most central stations will be disposed to talk them over and come to a fair mutual agreement. Where the utility men on the other hand are inclined to be arbitrary and to act unfairly the contractors can, if possessed of back bone, by presenting a solid front bring these Goliaths low.

## Less Than the Least

Two sets of figures came to the desk during the past month which are interesting simply because they are not unusual. One was the announcement of contracts awarded on June 1 for the new school building at Cumberland, R. I., as follows:

| | |
|---|---|
| General Contract | $18,375 |
| Heating | 1,188 |
| Painting | 900 |
| Plumbing | 800 |
| Electrical Work | 115 |

The other figures, compiled by the Copper and Brass Research Association, gave the cost for the different items of expense in a $15,000 house taken from the costs of nine houses varying in price from $9,000 to $23,000 and averaging $15,000. They were:

| | | | |
|---|---|---|---|
| Carpentry | 27.2 | percent | $4,080 |
| Stucco, plaster, tile work | 10.6 | " | 1,590 |
| Masonry | 9.4 | " | 1,410 |
| Plumbing | 9.3 | " | 1,395 |
| Heating | 7.0 | " | 1,155 |
| Roofing, flashings, gutters, etc., | 6.1 | " | 810 |
| Painting and glazing | 4.5 | " | 675 |
| Hardware and screens | 2.9 | " | 435 |
| Wiring and fixtures | 2.7 | " | 405 |
| Excavating and grading | 1.8 | " | 270 |
| Total Construction | 81.5 | percent | $12,225 |
| Builder's profit | 9.4 | percent | $1,410 |
| Architect's fee | 4.5 | " | 675 |
| Landscaping | 3.0 | " | 450 |
| Financing | 1.6 | " | 240 |
| | 100.0 | percent | $15,000 |

The least of all, except excavating and grading which is virtually all labor, is the electrical work. Even hardware and screens occupy a bigger place in construction costs than the combined wiring and fixtures.

How long must the electrical work continue to be less than the least?

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| **TENNESSEE** | | |
| Chattanooga (L) | P. W. Curtis | 725 Walnut Street |
| Knoxville (L) | Jerry G. Pason | 303 West Church St. |
| Memphis (L) | J. J. Brennan | 12-16 So. Second St. |
| Nashville (C) | J. T. S. Lannon | c-o Electric Equip. Co. |
| **TEXAS** | | |
| Beaumont (C) | J. A. Solleder | Houston & Bolivar Sts. |
| Dallas (C) | P. B. Seastrunk | 2032 Commerce St. |
| Houston (C) | J. W. Read | 715 Capitol Avenue |
| **UTAH** | | |
| Salt Lake City (C) | C. Lamont Felt | 18 West Second St. |
| **VIRGINIA** | | |
| Lynchburg (C) | J. L. Fennell | c-o Fennell & App |
| Norfolk (L) | K. D. Briggs | 227 Arcade Bldg. |
| **WASHINGTON** | | |
| Seattle (L) | P. L. Hoadley | Seaboard Building |
| **WISCONSIN** | | |
| Green Bay (C) | V. E. Grebel | 531 S. Broadway |
| Madison (C) | Otto Harloff | 602 State Street |
| Milwaukee (C) | R. H. Grobe | 156 Fifth Street |
| **CANADA** | | |
| Montreal (C) | George C. L. Brassart | 674 Girouard Ave. |
| Vancouver (C) | James Hart | 323 B. C. Electric Bldg. |
| Winnipeg (C) | Sydney F. Ricketts | 76 Lombard Street |

# JUNE ACTIVITIES

## Uniform Electrical Ordinance Ready

There has recently been drawn up and released by the Law Committee of the Electrical Manufacturers' Council, a Uniform Electrical Ordinance that has been revised to conform to suggestions of a committee of the Association of Electragists, International, and is approved and recommended by the Association.

The purpose of the ordinance is to provide in legal, simple, short form, an ordinance which will make the National Electrical Code at all times the basis for standards of installation without requiring amendments to a local ordinance whenever Code standards are revised.

The gist of the ordinance lies in Section 7, reading as follows: "Construction Requirements. No certificate of inspection shall be issued unless the electric light, power and heating installations are in strict conformity with this ordinance, the statutes of the State of * * *, the rules and regulations issued by the Industrial Commission of * * * under authority of the state statutes, and unless they are in conformity with the most approved methods of construction for safety to life and property. The regulations as laid down in the National Electrical Code, as approved by the American Engineering Standards Committee, and in the National Electrical Safety Code, as approved by the American Engineering Standards Committee, and other installation and safety regulations approved by the American Engineering Standards Committee shall be prima facie evidence of such most approved methods."

The Uniform Electrical Ordinance provides that the National Electrical Code shall automatically become the standard for installation methods under such ordinance, but does not provide for the necessary definition for cities which have adopted higher standards than the minimum required by the Code.

Recognizing that in hundreds of cities higher standards than the minimum requirements of the National Electrical Code have already been adopted by requiring "All-Metal" wiring either within the congested districts and fire zones, or throughout the cities, and because of the rapid spread of the "All-Metal" idea to other cities, the Association of Electragists, International, recommends the following additional sentence in this Uniform Electrical Ordinance to provide such "All-Metal" standards for those cities.

Under Section 7, as the first sentence in that Section, "All wiring for light, power and heating installations within the city of * * * (or within specified limits of the city of * * *) shall be enclosed in rigid or flexible metal covering."

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### California Electragists to Promote Red Seal Throughout State

Plans have been worked out whereby the responsibility for sales promotion and cooperative effort in the execution of the Red Seal Plan has been delegated by the California Electrical Bureau to the California Electragists. This is the first league to be granted a state wide license, in all other cases the license being confined to a single city.

This activity on the part of the California Electragists is the first that will be undertaken under a new arrangement whereby the Electragists will do much of the cooperative field and promotional work of the California Electrical Bureau as the latter directs.

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### Oklahoma Planning Membership Drive

A meeting of Oklahoma Electragists was held on May 29 to discuss plans for building state and national membership. The attendance while not large was enthusiastic, some men having driven 160 miles to attend.

The next meeting of the state association will be held at the May Hotel, Tulsa, on August 28. To insure a big attendance at this meeting tickets covering registration fee and banquet will be sold throughout the State by keymen in advance.

The officers of the association are: Charles McCallum of the McCallum Electric Co., Tulsa, president; C. G. Sego, Sego Electric Co., Pawhuska, secretary; Harry G. Hoke, Hoke Electric Co., Stillwater and R. B. Wedding, Oklahoma City, executive committeemen.

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### Penn State Association

The thirteenth annual meeting of the Pennsylvania State Association of Electrical Contractors and Dealers is announced for September 10, at the Hotel Jermyn, Scranton, Pa.

An invitation is extended to all branches of the industry to participate in the discussions of practical ideas on electrical development. Full announcement will come later.

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### Raleigh Trying to Raise License Fee to Check "Floaters"

To discourage "floaters" the Electrical League of Raleigh, N. C., has requested the city commissioners to raise the license tax on electrical contractors from the present graduated scale of $10.00 to $25.00 per year to $50.00 per year for each concern plus $10.00 for each wireman employed.

This action was not aimed at the small contractors but was done in the interest of the public according to Mr. W. L. Summers president of the league who made the following statement to a local paper:

"The idea of this request was to put the license out of reach of each of the 'floaters' who, in the past could obtain a contractors license for $10.00, secure two or three jobs and finish about two thirds of the work, collect 75 percent of the money due and leave town.

"To make the story shorter, we want better electrical installation; better workmanship; less fire risk and a more satisfied public, and not to 'drive out the small dealer.' In the first place an increase of $25.00 to $40.00 will not drive them out as it is a very small sum compared with the years business done by the very smallest of 'the small contractors.'"

# Convention Plans Nearing Completion

## Quarter Centennial Gathering Attracting Attention of Contractor-Dealers and Manufacturers Everywhere

PLANS are now going rapidly forward that will make the twenty-fifth annual convention of the Association of Electragists, International, being held this year at the West Baden Springs Hotel, West Baden, Indiana, on September 23, 24 and 25, one of the greatest and most constructive gatherings of contractor-dealers in the history of the electrical industry.

From present indications all sections of the country will be represented and matters of national importance to the industry that are discussed and settled will be the voicings of the most representative body of electrical contractor-dealers ever assembled.

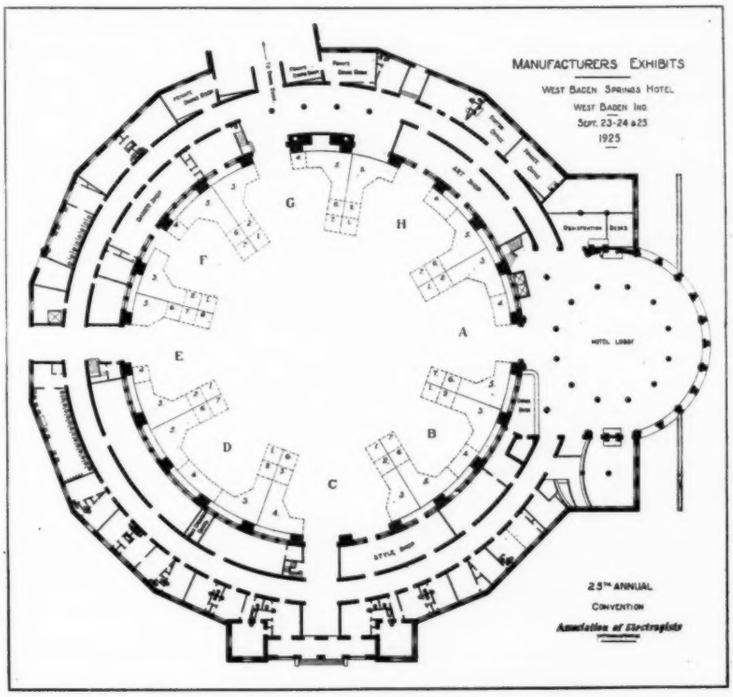
The accompanying diagram shows the floor plan of the great Pompeian Court of the hotel where the manufacturers exhibit will be held. Nearly all the booths are contracted for and Laurence W. Davis, general manager of the A. E. I., announces that manufacturers are planning to make this convention the apex of their yearly drive to place products before the contractor-dealers.

Arthur L. Abbott, technical director of the A. E. I., is working out a plan for special lighting effects that will greatly enhance the beauty of the exhibit.

An item of prime importance is the following list of rates at the hotels during the convention.

This year in addition to the American Plan accommodations at the West Baden Springs Hotel, arrangements have been made with the Homestead Hotel where the European Plan of rooms without meals is followed and the guest can stop at either hotel and have his meals included in his room costs or not, just as he wishes. Excellent cafeteria service is available to guests of the Homestead Hotel.

Arrangements have also been made at the Hoosier Country Club to take care of a limited number.




WEST BADEN SPRINGS HOTEL RATES PER DAY INCLUDING MEALS:

| | | Per person |
|---|---|---|
| Inside Room | | |
| Without bath | one person | $7.00 |
| Without bath | two persons | $7.00 |
| Outside Room | | |
| Without bath | one person | $8.00 |
| Without bath | two persons one double bed | $8.00 |
| With bath | two persons double bed | $9.00 |
| With bath | two persons single beds | $10.00 |

HOMESTEAD HOTEL, WEST BADEN, RATES PER DAY NOT INCLUDING MEALS:

| | | Double |
|---|---|---|
| Single room with running water | $1.50 | $2.50 |
| Single with toilet | $2.00 | $3.50 |
| Single with bath | $2.50 | $4.00 |

RATES AT THE HOOSIER COUNTRY CLUB, WEST BADEN, WITHOUT MEALS:

| | | Double |
|---|---|---|
| Single, without bath | $3.00 | $5.00 |
| Single, with bath | $4.00 | $7.00 |

Thus it will be possible for contractor-dealers everywhere to attend and rest assured they will find hotel accommodations to their liking.

The golf course and other features are open to each convention guest regardless of which hotel he stops at.

An ambitious program has been arranged by the entertainment committee, or better known as the Glad Hand Committee of which Samuel A. Chase is general chairman; "Tom" Bibber, of Chicago, is chairman of the Carnival Ball Committee; "Jack" Caddigan, of Boston, heads the Minstrel and Music Committee; Walter Collins, of Chicago, has arranged the Field Day activities and Charles E. (Jesse) James, of Fort Pierce, Florida, has agreed to be chairman of the Ladies Entertainment Committee.

A brief synopsis of the programs follow:

DAILY EVENTS:

9.00 a. m.—10.30 a. m.—Exhibition period.
10.30 a. m.—12.30 p. m.—Convention session.
1.30 p. m.— 2.00 p. m. Exhibitions.
2.00 p. m.— 5.00 p. m. Electragist's session.
7.30 p. m.— 9.00 p. m. Exhibition period.
9.00 p. m.—12.00 m. Dancing.

On Wednesday afternoon the ladies will be entertained at the Hoosier Country Club and in the evening the Carnival Costume Ball is held at the West Baden Springs Hotel. On Thursday the ladies go on an auto trip to the Indian Caves and in the evening the Minstrel and Music Committee puts on its program.

Friday afternoon the Field Day sports take place with "Central Station Night" the feature of the evening. A reception will be held to the delegates attending the Great Lakes Division N. E. L. A. Convention being held at French Lick Springs Hotel which is but a short walk from the West Baden Springs Hotel.

# Boyd Opposes Multiple Assemblies

IN a letter addressed jointly to the Chairman of the Electrical Committee and to the president of the Underwriter's Laboratories and sent also to each member of the Electrical Committee and of the Western Association of Electrical Inspectors, William S. Boyd, Electrical Inspector, Chicago, has stated his reason for opposing the installation of twin and multiple assemblies.

He presented a report of a fire due to a low resistance leak which made possible a heavy flow of current over a branch circuit supplying energy to a pressing iron. The secondary was grounded in compliance with the Code, the branch circuit fuses had pennies behind them, and so were inoperative, while the iron was resting on a grounded gas range and eventually the heating element came in contact with the iron thus completing the circuit.

The effect produced, according to Mr. Boyd, indicates that the flow of current reached a value approximately equivalent to 400 percent of the allowable carrying capacity of the wires. This in his opinion justifies previous experiments in which assemblies were subject to a 400 percent overload.

Mr. Boyd states that the report together with overload tests made on RomeX (the first of such assemblies to be offered for sale) seems to indicate that "we may reasonably expect fires in any and all buildings of combustible construction wired with so-called nonmetallic armored cable, such as RomeX, when the following combination of conditions is present:

"(1) Fuse plugs with pennies behind them or other interference which will prevent their normal operation.

"(2) A pressing iron or other portable electrically heated appliance of more than 500-watt capacity supplied with current from a convenience outlet.

"(3) The presence of a grounded surface upon which the iron, or other portable electrically heated appliance, may be rested, or with which it may accidentally come in contact.

"I am convinced that loyalty to the best interests of all concerned demands adherence to the following program:

"No. 1—Energetic resistance to all efforts calculated to lower the standard for wiring set forth in the National Electrical Code, 1925 Edition, until such time as the enforcement of these rules has produced a generous and definite reduction in the losses attributable to fires of electrical origin.

"No. 2—Energetic promotion of the increased use of the more fireproof types of electrical wiring.

"No. 3—Energetic opposition to the installation of so-called assemblies of twin and multiple conductors generally known as non-metallic armored cable, such as RomeX, until such time as the control of the safety fuse is effective in practically eliminating the prevalent practice of rendering fuse protection inoperative.

**WARNING**

**Any contractor receiving from the Circle Construction Company of New York an invitation to bid on electrical work is requested to report it at once with full particulars to this office. The Circle Construction Company in sending out invitations asks for a deposit of $50 to $60 on the plans, stating that the money will be refunded when plans are returned.**

**We now have three cases where contractors could not secure the refund.**

**The invitation to figure generally is by wire.**

**Should any other contractor have had a similar experience we shall be glad to have him give us the particulars.**

## Canton Contractors Secure Rigid Ordinance

One of the most rigid electrical ordinances in the country has recently been passed by the City of Canton, Ohio. It was started and prepared by the local Electrical Contractors and Dealers Association.

The ordinance provides for five kinds of licenses as follows: General Electrical Contractor, who may do all kinds of electrical work; Electrical Construction, the same as the former excluding sign and fixture work; Fixture License, restricted to fixture work; Sign License, restricted to sign work, and Maintenance License, restricted to building owners for maintenance work only in their buildings. License fees are $150.00 a year for those in the general electrical contractor group and $100.00 a year for all others. A $2500 bond is also required.

An examination is required before a board of fire underwriters as follows: City electrical inspector, two general electrical contractors and two journeymen who have had at least five years experience. To qualify for a license the applicant must be (1) over twenty-one years of age, a citizen of the United States and of good moral character; (2) a graduate electrical engineer from a recognized college and having also at least one year's experience in the business as contractor or wire man; or have had at least five years actual experience as a master electrician or journeyman; (3) must possess a fair knowledge of the laws of the state and city affecting the installation of electrical wiring.

The new ordinance makes the Code its basis for inspection as follows: Wiring "shall be covered by any or all of the old or revised sections of the National Electrical Code; and of the building code of the State of Ohio."

## New York State Association Holds Annual Meeting at Cooperstown

The eighth annual meeting of the New York State Association of Electrical Contractors and Dealers was held at Cooperstown, New York, on June 15 and 16 and at its conclusion members voted it one of the most constructive meetings in the history of the organization.

One of the features was a talk by Laurence W. Davis, general manager of the A. E. I., who spoke on the afternoon of June 15 and chose as his subject, "Analyzing the Contractor's Business."

Mr. Davis covered the various phases of the contracting field and showed the need of departmentalizing the business into two branches, first, Merchandising and store sales; second, Contracting, which is composed of two parts; A, Sales of materials, apparatus and equipment; and B, Construction engineering for installing these materials.

A group luncheon was held at the New Fenimore Hotel during which several impromptu speeches were made and later in the afternoon members gathered for a business session. The feature of the evening was a dance at the hotel.

On the following morning a breakfast meeting was held and association affairs discussed. It was decided to change the title of the organization head from chairman, to president, elect a vice president and reduce the executive committee from twelve members to five.

The annual election of officers was then held and resulted as follows: President, A. Lincoln Bush, of R. A. Belmont & Co., Inc., New York City; vice president, G. Fred Laube, of the Laube Electric Corp., Rochester; treasurer, James F. Burns, of Schenectady; and secretary, H. F. Janick, of Rochester, field representative of the A. E. I.

The executive committee was elected as follows: Hugo Tollner, Brooklyn; C. C. Miller, Oneonta; F. H. Newman, Albany; F. A. Mott, Rochester and M. H. Johnson, Utica.

The speakers of the afternoon were E. J. MacEwan, secretary Oneonta chamber of commerce and Samuel A. Chase of the Westinghouse Electric & Manufacturing Company.

The "Grand Finale" of the meeting was a clambake on the shore of Otsego Lake.

## Employes Honor Mr. and Mrs. Hugo Tollner

The employes of the Tollner Electric Company, 523 Nostrand Avenue, Brooklyn, N. Y., held a surprise supper on June 4 in honor of the silver wedding anniversary of Mr. and Mrs. Tollner, who had just returned from a southern trip. One of the features of their trip was the visiting of the church in which they were married at Alexandria, Va.

After the supper, L. H. Harding, secretary and treasurer of the company, presented Mr. and Mrs. Tollner with a set of Gorham silver in behalf of the employes. Dancing followed the presentation.

## Meeting of New York Independent Contractors

An especially interesting and instructive meeting was held by the Independent-Associated Electrical Contractor-Dealers of New York City in conjunction with the Merchandising Group of the Electrical Board of Trade of New York at the latter's meeting rooms on June 10th, with President L. C MacNutt of the Independents presiding.

The principal speaker of the evening was Mr. Joseph Forsyth of the New York Board of Fire Underwriters who spoke on the changes in the 1925 code and their significance to the contractor.

Mr. William Ergert, chairman of the estimators' group of the Board of Trade was also a speaker and chose as his subject, "Estimating."

Albert A. A. Tuna, secretary of the Independents announced that tickets for the annual outing to be held at Oakwood Arms, Oakwood Heights, Staten Island, New York on July 11th were going fast and from present indications a record crowd is expected.

## Propose Licensing in North Carolina

The North Carolina state legislature has under consideration at this time, a law prepared by the fire marshal of the state providing for the state licensing of all contractors and electric wiremen. This law provides that before a man is authorized to practice electric wiring as a workman or contractor he must qualify with the requirements of the state.

## Standard Accounting System Featured

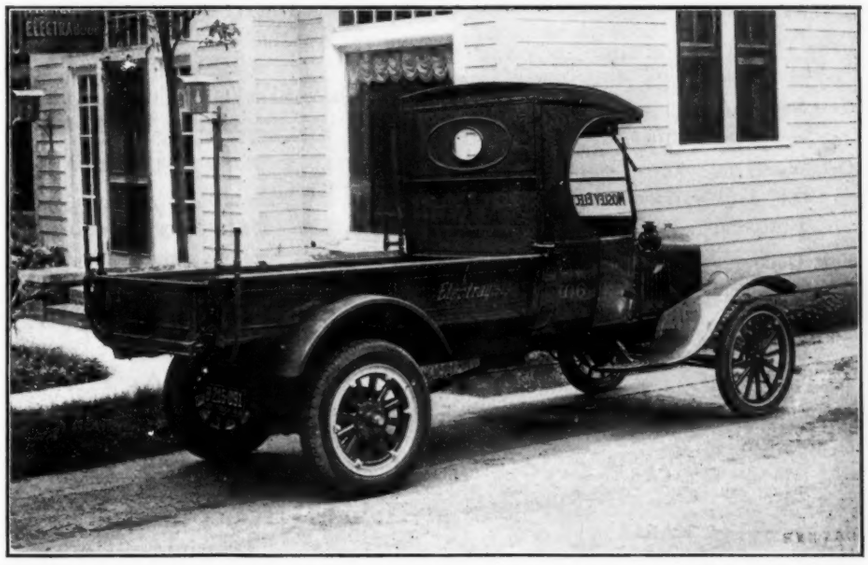
The May dinner meeting of the Rhode Island Electrical League was held in Providence on the 27th, at the Turks Head Club, and the feature of the evening was a talk on accounting systems. This was a departure from the usual practice of having only speakers on electricity.

C. A. Knutton, a public accountant of Providence was the featured speaker and presented to the members the advantages of using the Association of Electragist's accounting system.

He stated that the three factors to consider, were, first, the compiling of a profit and loss sheet each month; second, knowing all the time exactly what the profit and loss was; and third, having the books in such shape that no trouble would be experienced in making out tax reports.

He showed how the Standard Accounting System filled all these needs and went on to explain that the contractor without a suitable set of books was apt to pay more taxes than were necessary.

# This Company Believes in Advertising Quality by Featuring "Electragists"



THE Mosely Electric Company, of Montgomery, Alabama, has just added the truck shown above to its equipment, and as is evident from the photo, believes in using the name ELECTRAGISTS at every opportunity to impress the public with the idea that it stands for quality and service.

The truck is painted a rich blue, trimmed in black with lettering in gold leaf, and the company states that it proves a most attractive advertising medium while standing on a job as well as a very serviceable method of handling the larger jobs out of the city and has occasioned considerable comment.

The circular ELECTRAGIST symbol is on the windshield.

## New Electragists

The following list of contractor-dealers have made application for membership and been accepted into the A. E. I. since the publication of the last list in the June issue:

**CALIFORNIA**

**Antioch:**
The Electric Shop.

**Crockett:**
Crockett Elec. Shop.

**Lafayette:**
The Electric Shop.

**Los Angeles:**
Graham Elec. Co.
Lyle J. Moody Elec. Co.
English Electric Co.
Motor & Machinists Supply Co.
Triple Elec. Company.

**Martinez:**
L. Stinchfield.

**Oakley:**
Oakley Elec. Shop.

**Rodeo:**
Rodeo Electric Shop.

**FLORIDA**

**Deland:**
Athens Elec. Co.

**Jacksonville:**
Bay-Secrest Elec. Co.
P. S. Kelly.
Samuel B. Kitchen.
S. C. Reddick, Elec'l Contr.
W. A. Stall.

**Lake Worth:**
Lake Worth Elec. Shop.

**New Smyrna:**
Chapman Electric Co.

**Orlando:**
Fred C. Wiegmann.

**IOWA**

**Fort Dodge:**
C. M. Smiley Elec. Shop.

**Independence:**
J. R. McKain Elec. Supply Co.

**Jefferson:**
E. R. McCaffrey.

**Oelwein:**
Hub City Elec. Co.
Mack Elec. Co.

**KANSAS**

**Hutchinson:**
Cates Electric Co.

**LOUISIANA**

**New Orleans:**
Copp & Bowles Co.

**MINNESOTA**

**Duluth:**
The Electric Shop.
Mechanical-Elec'l Contr. Co.
Zenith Elec. Shop.

**Minneapolis:**
American Plbg. & Htg. Co.
Findley Elec. Co., Inc.
E. B. Kelly & Co.
Langford Elec. Co., Inc.
Lloyd Elec. Co.
Frykman Bros. Elec. Co.
Builders Elec. Co.
Minneapolis Elec. & Const. Co.
South Side Elec. Co.
Standard Elec. Serv. Co.

**New Ulm:**
Ulrich Elec. Co.

**MISSISSIPPI**

**Jackson:**
Century Electric Co.

**Starkville:**
Goodman Electrical.

**MISSOURI**

**Columbia:**
Weathers Elec. Co.

**Kansas City:**
Evans Elec'l Const. Co., Inc.

**St. Joseph:**
Karrasch Elec. Const. Co.
Standard Elec. Co.

**NEW YORK**

**Canajoharie:**
Canajoharie Supply Co.

**Oneonta:**
Clyde D. Utter.

**Rochester:**
Highland Elec. Shop.
Palco Electric Co.

**Unadilla:**
F. G. Constable.

**Utica:**
Winterbottom Elec. Co., Inc.

**NORTH CAROLINA**

**Shelby:**
Shelby Elec. Co., Inc.

**OKLAHOMA**

**Norman:**
E. W. Cralle & Co.

**Tulsa:**
Rickard-Ferguson Elec. Co.

**OREGON**

**Eugene:**
Bailey Electric Co.

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## Holmes Heads Detroit Electragists

The Detroit Branch of the Association of Electragists met on June 1 and elected the following officers: F. H. Holmes, Holmes-Michael Electric Co., president; John H. Busby, John H. Busby Co., treasurer and N. J. Biddle, 478 Penobscot Bldg., secretary.

In reporting this news E. McCleary, executive committeeman from this district, states: "Under the active management of the secretary we expect to experience maximum benefits from our membership."

Detroit contractors have had the reputation for many years of being well organized and working together harmoniously.

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## Kansas City Electric Club

The Kansas City Electric Club is interested in starting a Red Seal Campaign and following the recent visit of Kenneth McIntyre of the Society for Electrical Development, who spoke to an informal group of interested members, a committee has been formed, headed by B. L. McCreary of the Squire Electric Company, to work out minimum house wiring standards for Kansas City, this being the first step in the campaign.

The members of the club took part in the Civic Club golf tournament for the first time since the Kansas City Electric Club was formed and had the distinction to win first place in the number of points won on scratch.

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## Standard Marking for Motor Dimension Sheets

The Electric Power Club has adopted as "recommended practice" a standard method of marking dimension sheets for motors.

The club has also issued its new Power Switchboard and Switching Equipment Handbook of basic instructions for the installation, operation and care of such equipment. Copies may be had for 50 cents each by writing to the club, Keith Building, Cleveland, Ohio.

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## California Electragists Planning Convention

The divisional convention of the California Electragists, which is to be held at Eureka, Cal., on August 6, 7 and 8, promises to be a stellar event in the history of the organization, according to plans already arranged.

It is the annual meeting and is expected to be especially well attended as it is the first group convention of the association since the recent consolidation.

The feature of Thursday, August 6, is in the general open meeting for members while the ladies are touring the coast by auto.

On Friday, the trip to the logging camp takes place where the guests see the electric mills in operation and partake of a real lumberjack dinner. In the evening the ball is held.

Saturday starts with a golf game at 6 a. m., after which the contractors engage the jobbers on the baseball diamond. The day winds up with a banquet, followed by a dance.

Many of the members of the Southern Division are planning to motor to Eureka over the famous Redwood Highway.

Arrangements have also been made so that members can go by stage, leaving San Francisco at 6:45 a. m. and arriving in Eureka at 8:20 p. m.

The initial quarterly convention of the Southern Division was held at Hotel Maryland, San Diego on June 27. The members went from Los Angeles to San Diego by steamboat.

For the ladies the entire morning was devoted to a golf tournament or trips about the city while the men held an executive committee meeting and discussed present conditions of electrical merchandising.

Plans were also laid for the carrying through of the Red Seal campaign.

In the evening the San Diego electragists furnished a program and a banquet was enjoyed followed by general dancing.

## Georgia Electrical Association Elects Officers

At a meeting of the Georgia Electrical Association on May 21 and 22 the following officers were elected for the coming year: G. K. Hutchins, Columbus, president; H. A. Pendergraph, Athens, vice-president; and W. W. Barr of Atlanta, secretary and treasurer.

## Cleveland League Election

The Electrical League of Cleveland held an election of officers on June 8 and unanimously chose J. E. North, present president of the league, to continue in that office for the coming year. This makes the third consecutive year he has headed the organization.

H. L. Martien, president of the electrical contracting company of Cleveland that bears his name, was elected vice-president of the league, and S. C. Hansen, and Harry Hutchisson, secretary and treasurer respectively, were re-elected.

## Manufacturers Indorse Red Seal

The special Red Seal Advisory Committee set up by the Associated Manufacturers of Electrical Supplies last year, brought in a report at the annual meeting in June asking the association again to indorse and approve the Red Seal plan and suggesting to manufacturers that they contribute to a fund of $25.000 to be used by the Society for Electrical Development for the Red Seal expenses which are not local.

In speaking of the plan the committee stated. "We are confident that the plan is sound, practical, and in accordance with the best interests of all branches of the industry."

To date the plan has been presented by the Society's staff in 76 cities.

Red Seal licenses have been granted in Syracuse, N. Y., Rochester, N. Y., Buffalo and Niagara Frontier, N. Y., Pittsburgh, Pa., Louisville, Ky., Detroit, Mich., Atlanta, Ga., and Poughkeepsie, N. Y.

Plans are in the final stages and funds provided for operating the Red Seal plan in Grand Rapids, Mich., St. Paul, Minn., Philadelphia, Pa., Youngstown, Ohio, and Vancouver, B. C.

The California Electrical Bureau has arranged with the California Electragists to handle the Red Seal plan throughout California.

## News Notes Concerning Electrical Contractor-Dealers

Bushyager and Droutz of Fourth St., Jeannette, Pa., have purchased the electrical business of Fred Brown on Third Street, that city, and will continue operating both establishments.

The Karr-Anderson Electric Company has been formed and will enter the electrical contracting and appliance field at 228 E. Tennessee St., Florence, Ala.

Ernest F. Green, electrical contractor of Corning, N. Y., has moved to larger quarters in the State Theatre Building.

The Mills Electric Company has opened an electrical store at 48 West Huron Street, Buffalo, N. Y.

David J. Thomas and Stewart Thomas, electrical contractors, Wilkes-Barre, Pa, have added a merchandising department to their business.

The Commercial Electric Shop has been opened in Pocatello, Idaho, by Mrs. Brownie Carter, at 113 North Main Street.

A new store under the management of William C. Dunn has been opened at Fairmount, W. Va., by the S. & D. Electric Company.

The Farney Electric Company has succeeded the Farney & Scheidell Electric Company and will continue the business at the present location, 6307 Harvard avenue, Chicago.

Plymouth, Ind., has a new electrical shop, which has been opened by R. A. Jeffirs.

The lease and stock of the Lammers Electric Company, 51 East Gay street, Columbus, O., has been purchased by Fred G. Wolf, the owner of the Electric Service Company, 337 South High street.

Aime Pelletier has opened a business specializing in fixtures at 10 East Main Street, Fall River, Mass.

An electric shop has been established in Imperial, Cal., by C. L. Jenkins.

Electrical fixtures will be the specialty of the new store established at 2371 Whitney avenue, New Haven, Conn., by W. E. Armstrong.

W. J. Chapman has purchased the business of the Mississippi Electric Shop, 132 Fifth avenue, Clinton, Ia.

Charles E. James, proprietor of the Lektrik Shop, Fort Pierce, Florida, announces that W. O. Watkins, formerly in the sales room of the City of Jacksonville's merchandising department, has joined his staff and will take charge of store sales.

A new store to be known as Friedel's Electric Shop has been opened by Leslie W. Friedel at 214 North Main Street, Burlington, Iowa.

Anderson, Inc., of Nashville, Tenn., announce that they have equipped their shop to enter the motor repair field.

Harry McCoy has opened an electric shop in the Bruno Block, Branford, Conn.

# •MANUFACTURING•

A Department Devoted to the Latest Devices Used by the Electrical Contractor and Dealer

## Floor Box

The Adapti Manufacturing Company of Cleveland, Ohio, has just announced a new line of floor boxes and fittings for "under floor" installation. The company states that they are somewhat larger than the usual "Ell" or "Tee" but are considerable smaller than the usual floor box types, thus combining the advantages of compactness and ample room for wire and working space. They can be installed in any type of fire-proof floor construction. Plugs for connecting to under floor system are interchangeable with other plug receptacles that may be installed.

Type 1700 floor box shown above is straight-through type for either ½ in. or ¾ in. conduit. Side outlets are drilled and tapped according to specifications and are furnished in all sizes of conduit from ½ in. to 1 in. inclusive.

## "Dead Front" Panel Front

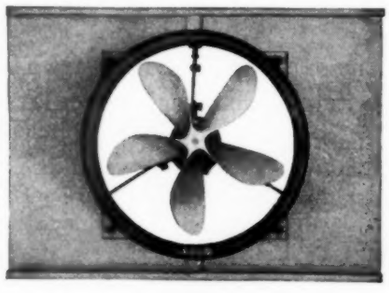
A new "dead front" fire pump controller that is manually operated and intended for use with squirrel-cage and wound-rotor motors that drive fire pumps installed as water suppliers, has recently been placed on the market by the Westinghouse Electric & Manufacturing Company.

The feature of the equipment is a double-throw oil circuit breaker which eliminates the necessity of having a knife switch, with current carrying parts, on the front panel. Thus it is impossible for the operator to come in contact with live parts.

For squirrel cage motors, the controller is made up of a sheet metal panel on which is mounted an oil circuit breaker for connecting the panel to any one of two sources of power supply, an enclosed auto-starter with non-corrodible fittings, panel mounted ammeter and voltmeter, and a pilot lamp. All operating parts are mounted in the rear and completely enclosed.

## Home Ventilating Fan

The Azor Manufacturing Company of Cleveland has placed on the market a home ventilating fan, one feature of which is that it can be installed by the purchaser using only a screwdriver. The company states that the extension panel permits quick and easy installation in almost any window.



The fan is a one piece aluminum casting and is designed upon aeroplane propeller principles for greatest efficiency in the displacement of air. The motor and fan are mounted in an aluminum frame with woven fabric which absorbs vibrations and makes a quiet fan.

It has a capacity of 600 cu. ft. per minute, weighs 15 pounds with panel and comes complete with 10 ft. of cord and separable plug.

The company also announces a "super fan" for ventilating stores, offices, etc. It has a capacity of 2500 cu. ft. and weighs 54 pounds.

## Brass Shell Sockets

A new line of brass shell sockets, designed primarily for fixture and lamp use, is announced by the Circle F Manufacturing Company of Trenton, New Jersey.

Type 4700, shown on the left, is the keyless body type, while 4800 shown on the right, comes in push button body only.

Both sockets have ample wiring spaces, the binding head screws are long and the ends are upset so they cannot drop out. The locking mechanism of cap and shell is the standard Circle F security type, a direct push and turn being all that is needed to assure a positive lock.

The company also announces the marketing of a newly designed ceiling light receptacle which carries the same number as the receptacle previously manufactured, but takes the place of the list appearing among the items as 218, 218-S and 219-S.

A rigid bracket socket to be known as No. 218 is also being made and added to the list of candle sockets this company is manufacturing.

## Johns-Pratt Catalog

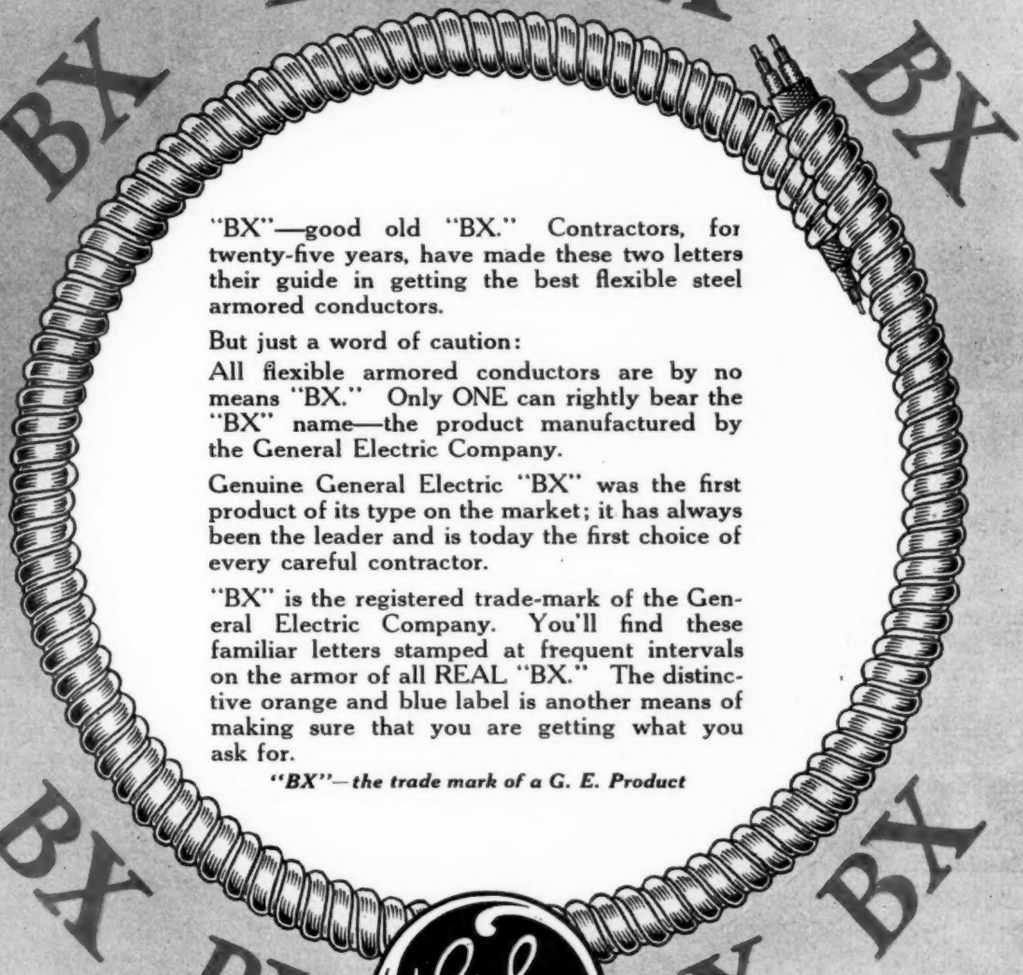
The Johns-Pratt Company of Hartford, Conn., has just issued a new catalog, No. 55.

It contains a complete description of the company's line of Noark meter service switches, main entrance switches, enclosed fuses, cutout blocks and cast iron fuse and service boxes.

The new catalog comprises the entire contents of catalogs 50 to 54 inclusive, completely revised as to list prices.

# A General Electric Product

BX BX BX BX BX BX BX BX BX



"BX"—good old "BX." Contractors, for twenty-five years, have made these two letters their guide in getting the best flexible steel armored conductors.

But just a word of caution:

All flexible armored conductors are by no means "BX." Only ONE can rightly bear the "BX" name—the product manufactured by the General Electric Company.

Genuine General Electric "BX" was the first product of its type on the market; it has always been the leader and is today the first choice of every careful contractor.

"BX" is the registered trade-mark of the General Electric Company. You'll find these familiar letters stamped at frequent intervals on the armor of all REAL "BX." The distinctive orange and blue label is another means of making sure that you are getting what you ask for.

*"BX"—the trade mark of a G. E. Product*

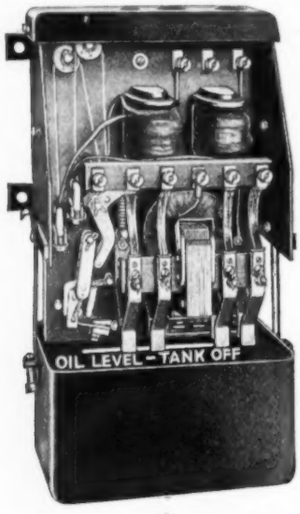
GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY MERCHANDISE DIVISION BRIDGEPORT, CONNECTICUT

46-102

## Starting Switches

The manufacture of a new push button operated oil switch for starting squirrel cage motors, and also single phase motors, is announced by the Electric Controller & Manufacturing Company of Cleveland, in bulletin No. 1408 just issued.




The cut shows Type ZO with oil tank removed. The starting switch throws the motor across the line when the "start" button is released, it is arranged for no-voltage protection or no-voltage release, and provides overload and phase failure protection by means of expansion wire temperature relays.

It has a maximum rating of 5 h.p. 110 volts, and 10 h.p. 220-440-550 volts.

Adjustable expansion wires for overload protection give inverse time element feature and are absolutely accurate, preventing damage to polyphase motors due to loss of one phase during starting and running, the makers claim.

## Condensed Notes of Interest to the Trade

Curtis Lighting Inc., 1119 W. Jackson Boulevard, Chicago, announces the appointment of George A. Hill to take charge of their Wisconsin territory. Mr. Hill will be located at 506 Mayer Building, Milwaukee, Wis.

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On Wednesday May 13, H. I. Finch, president of the Emerson Electric Manufacturing Company, 2012 Washington Ave., St. Louis, completed twenty-eight years consecutive service with the Emerson organization and was presented with an enlarged photograph and testimonial of affection by the employes of that company.

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The Coffield Washer Company, of Dayton, Ohio, announces the opening of an office in New York City, at 120 Liberty Street, to serve as headquarters for Glenn A. Wilson, eastern district manager.

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The Western Electric Company has opened a supply distributing house in Houston, Texas.

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The Trico Fuse Mfg. Co., of Milwaukee, announces a new location of their Chicago district sales office at 1742 Monadnock Block, 53 West Jackson Boulevard.

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The Condit Electrical Manufacturing Company of South Boston, Mass., announces the purchase of a 15-acre tract of land with two brick buildings covering about 200,000 sq. ft. of floor space at Hyde Park, Mass., to be used as an additional manufacturing center. The main office of the company will remain at 838 Summer Street, South Boston, Mass.

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The Radio Corporation of America announces several promotions and assignments in its sales divisions, among them are: H. T. Melhuish, assistant sales manager in charge of sales administration; Meade Brunet, assistant sales manager in charge of merchandising; Quinton Adams, assistant sales manager in charge of field supervision, all with headquarters at the New York office, and P. G. Parker, district sales manager with headquarters at the Chicago office.

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The Youngstown Sheet and Tube Company of Youngstown, Ohio, announces the removal of its New York office from room 1819, 30 Church Street, to room 1519, 30 Church Street.

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A recent addition to the sales department of F. A. D. Andrea, radio manufacturers, is C. Monroe Smith, former sales manager of the Domestic Electric Company, of New York City.

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O. B. Chandler has been appointed sales manager of the Western Electric Company supply distributing branch house at Memphis, Tenn , to succeed E. P. McGrath, who has been transferred to New York.

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V. G. Fullman, sales manager of the Steel City Electric Co., of Pittsburgh, has resigned his position and will be succeeded by J. R. Richards, credit manager for the past three years.

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A collection of luminaire designs of the various periods has been grouped together in the form of a book by the Luminaire Studios of Curtis Lighting, Inc., 1119 W. Jackson Boulevard, Chicago. They have also issued a book showing the newest applications of scientific and artistic lighting equipment.

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The Union Metal Manufacturing Co., of Canton, Ohio, most of the common stock of which has been held by one family, has just effected a reorganization, whereby a large proportion of the ownership has been transferred to a group of men representing influential connections in utility and financial circles in the middle West. During the past two months they have doubled their factory capacity to take care of the larger volume of business.

The sales for 1925 to June 15 have been over 100 percent greater than in any previous year. Many large contracts in this country, such as the relighting of Indianapolis, have been awarded the company this year.

The following officers have recently been elected: C. C. Barrick, president; Harry Ross Jones, chairman of the board; Chester A. Orr, vice president and treasurer; W. A. Porterfield, vice president and general sales manager and F. McGlashan, secretary.

The personnel of the sales and operating organization remains intact.

## Radio Products

C. Brandes Inc., of 200 Mt. Pleasant Ave., Newark, N. J., announces the manufacture of a new radio transformer which amplifies frequencies of from 200 to 4000 cycles per minute with a high voltage amplification ratio of 1 to 5. It is provided with outside soldering terminal base and is completely shielded.

The company also announces the manufacture of a new semi-goose neck type horn speaker that is 26¼ in. high and has a bell diameter of 12¼ in. A thumb screw is provided for making volume adjustments.